

Any of the forces to which a structure is subjected.

### 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.

### 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 deformation reaches a peak when the static force is maximum.

### 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.

### live load

Any moving or movable load on a structure resulting from occupancy, collected snow and water, or moving equipment. A live load typically acts vertically downward, but may act horizontally as well to reflect the dynamic nature of a moving load.

### 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 uplifting 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.

### 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 effect 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.

### erection stress

The stress induced on a building unit or component by loads applied during the erection process.

### erection bracing

The temporary bracing required to secure the units or components of a building until permanently fastened in place.

### 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 amplifying 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.

### 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 deformation does not necessarily correspond to the maximum magnitude of the applied force.

### construction load

A temporary load on a structure occurring during its erection, as from wind or the weight of construction equipment and stored materials.

# LOAD

## 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.

## epicenter

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

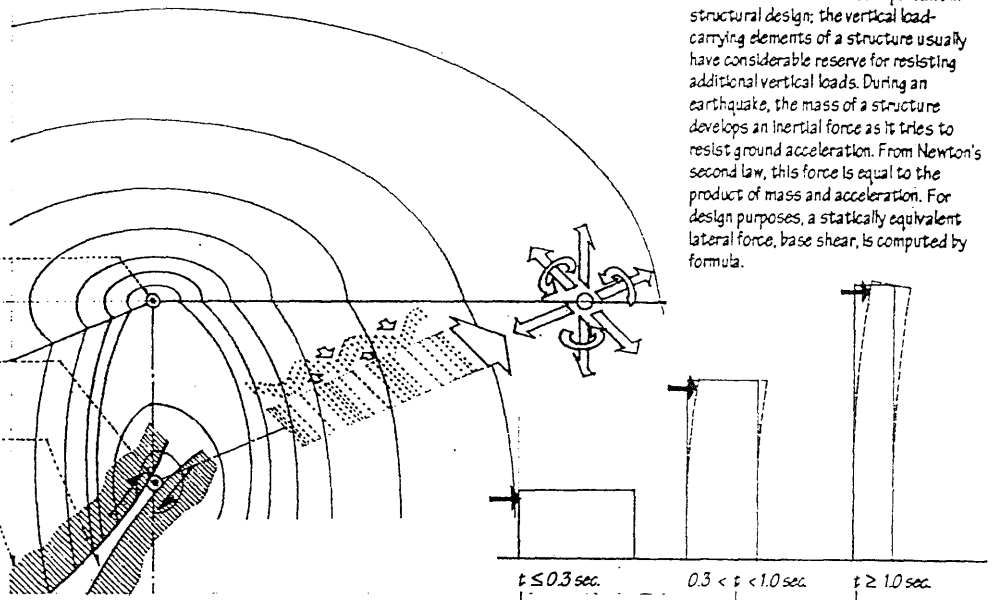
Any of the huge movable segments into which the earth's crust is divided.

## 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 load-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.



## 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

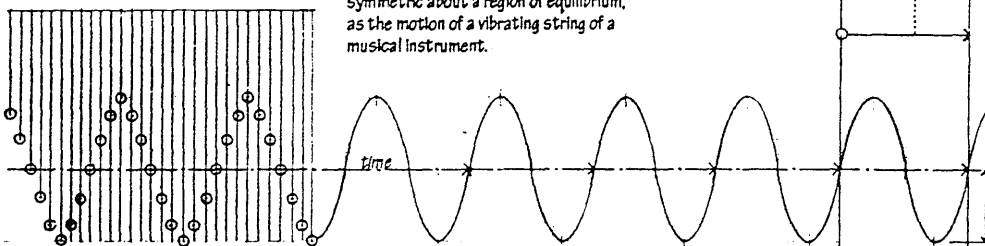
Periodic motion consisting of one or more vibratory motions that are symmetric about a region of equilibrium, as the motion of a vibrating string of a musical instrument.

## period

The time required for one complete cycle of a wave or oscillation.

## natural period of vibration

The time required for a body subject to a vibratory force to go through one oscillation in the direction under consideration. A structure's natural period of vibration varies according to its height above the base and its dimension parallel to the direction of the applied forces. A relatively stiff structure tends to oscillate rapidly and has a short period of vibration while a more flexible structure tends to oscillate slowly and has a longer period. Also called fundamental period of vibration.



## amplitude

The maximum displacement from the mean position during one period of an oscillation.

## oscillation

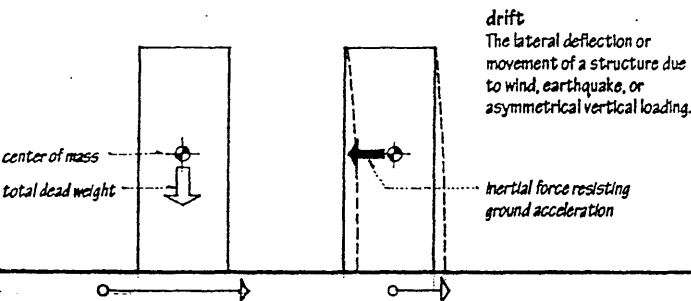
A single swing of an oscillating body from one extreme limit to another.

## oscillate

To swing back and forth like a pendulum between alternating extremes.

## resonance

An abnormally 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.

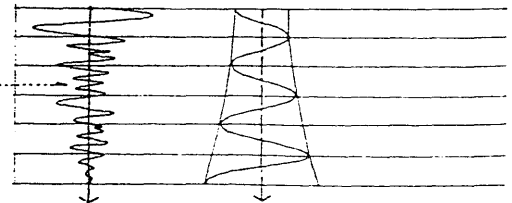


## ground acceleration

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 to progressively diminish successive oscillations or waves of a vibrating structure.



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.

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.

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 diluvial soils.

The sudden loss of shearing resistance in a cohesionless soil, causing the soil mass to behave as a liquid.

The distance required to avoid contact between separated structures under deflection from seismic action or wind forces.

The horizontal movement of one level of a structure relative to the level above or below.

The maximum ratio 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.

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.

A resisting moment provided by the dead load of a structure acting about the same point of rotation as the overturning movement. Building codes usually require that the restoring moment be at least 50% greater than the overturning moment. Also called righting moment, stabilizing 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.

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 heights and no irregularities in stiffness or mass, base shear is distributed to each horizontal diaphragm above the base in proportion to the floor weight at each level and its distance from the base. This results in a triangular load configuration varying from zero at the base to a maximum value at the top. 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 whiplash 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.

**base**  
The level at which earthquake motions are assumed to be imparted to a structure.

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.

**weight factor** -----  
The total dead load of a building, including the weight of furnishings, stored materials, permanent equipment, and heavy snow loads. Base shear is directly proportional to the mass of a building; the greater the mass, the greater the base shear.

ctor

**• 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

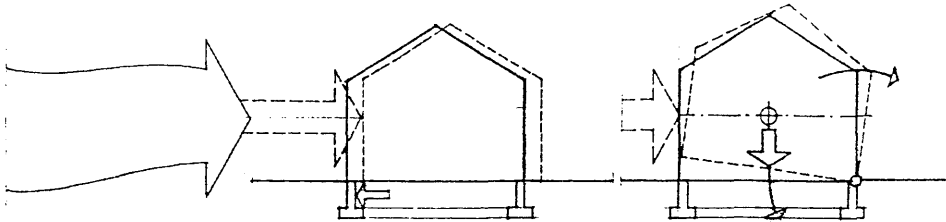
The total shear in any horizontal plane of a structure subject to lateral loads, distributed according to the various lateral force-resisting elements in proportion to their rigidities. Story shear is cumulative and increases from its minimum value at the top to its maximum at the base.

A diagram of a table with a vertical line drawn across its surface. Two arrows point from the left towards the line, and one arrow points from the right towards the line. A curved arrow indicates a path from the right side of the table towards the bottom right corner.

$$\frac{CZ1}{R_W} W = (V)$$

----- base shear

ground acceleration



## wind load

Any of the forces exerted by the kinetic energy of a moving mass of air, resulting in pressure on certain parts of a structure and suction on others.

## sliding

The horizontal movement of a structure in response to a lateral load.

## uplift

The raising of a structure or portion of structure in response to an overturning moment or wind suction.

## flutter

The rapid oscillations of a flexible cable or membrane structure caused by the aerodynamic effects of wind. Also called aerodynamic oscillation.

## Bernoulli equation

An expression of the conservation of energy in streamline flow, stating that the sum of the ratio of pressure to mass density, the square of the velocity divided by 2, and the product of the gravitational constant and vertical height, remains constant. Also called Bernoulli's theorem.

## dynamic wind pressure

The pressure exerted by a moving mass of air, derived from Bernoulli's equation and equal to the product of the mass density of the air and the square of the velocity at a given height divided by 2.

## design wind pressure

A minimum design value for the equivalent static pressure on the exterior surfaces of a structure resulting from a critical wind velocity, equal to the wind stagnation pressure modified by a number of coefficients to account for the effects of exposure condition, building height, wind gusts, and the geometry and orientation of the structure to the impinging air flow.

## importance factor

A coefficient for increasing the design values for wind or seismic forces on a building because of its large occupancy, its potentially hazardous contents, or its essential nature in the wake of a hurricane or earthquake.

## wind stagnation pressure

The static equivalent to dynamic wind pressure used as a reference in calculating design wind pressure, specified in pounds per square foot and equal to 0.00256 times the square of the basic wind speed for the geographic location. Wind velocity approaches zero as the moving air mass parts to flow around an obstruction. Since the sum of static and dynamic pressures remains constant in streamline flow, all of the energy in the flow at this point of stagnation is in the form of static pressure.

## basic wind speed

The wind velocity used in calculating wind stagnation pressure, usually the extreme fastest-mile wind speed recorded for a geographic location at a standard height of 33 ft. (10 m) and based on a 50-year mean occurrence interval. Also called design wind velocity.

$$P = C_e C_q q_s I$$

## pressure coefficient

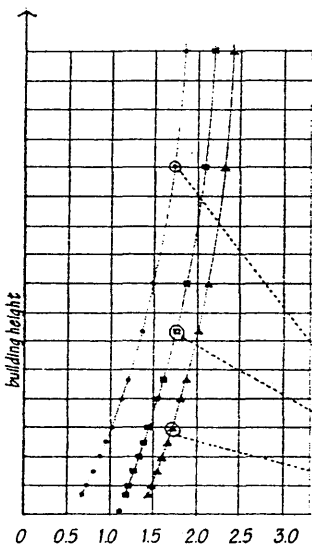
A coefficient modifying design wind pressure to reflect how the geometry and orientation of the various parts of a structure alter the effects of an impinging air flow. Inward or positive coefficients result in wind pressure while outward or negative coefficients result in wind suction.

## fastest-mile wind speed

The average speed of a one-mile-long column of air that passes over a given point, measured in miles per hour.

## wind suction

The negative pressure exerted by wind on the sides and leeward vertical surfaces of a building and normal to windward roof surfaces having a slope less than 30°.



## height factor

A coefficient increasing design wind pressure to account for the increase in wind velocity with height above the ground.

## gust factor

A coefficient increasing design wind pressure to account for the dynamic effects of wind gusts.

## exposure condition

One of four conditions modifying design wind pressure according to obstructions in the area surrounding a building site.

exposure A: urban areas with high-rise buildings, or rough, hilly terrain;

exposure B: suburban sites, wooded areas, or rolling terrain;

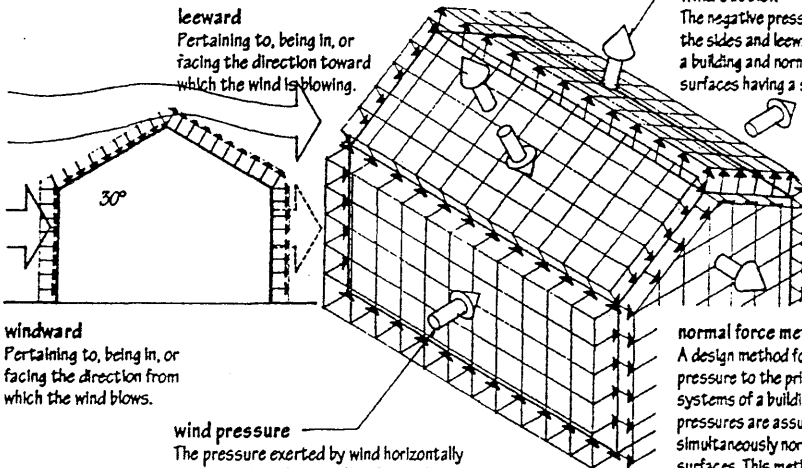
exposure C: flat, open terrain with minimal obstructions;

exposure D: flat, unobstructed terrain facing large bodies of water.

The more open a site, the greater the wind speed and the resulting design wind pressure.

## leeward

Pertaining to, being in, or facing the direction toward which the wind is blowing.



## windward

Pertaining to, being in, or facing the direction from which the wind blows.

## wind pressure

The pressure exerted by wind horizontally on the windward vertical surfaces of a building and normal to windward roof surfaces having a slope greater than 30°.

## normal force method

A design method for applying design wind pressure to the primary frame and bracing systems of a building, in which wind pressures are assumed to act simultaneously normal to all exterior surfaces. This method may be used for any structure, but is required for gabled rigid frames.

Tall, slender buildings, structures with unusual or complex shapes, and lightweight, flexible structures subject to flutter require wind tunnel testing or computer modeling to investigate how they respond to the distribution of wind pressure.

## projected area method

A design method for applying design wind pressure to the primary frame and bracing systems of a building. In which the total wind effect is considered to be a combination of a single inward or positive horizontal pressure acting on the full vertical projected area of the building and an outward or negative pressure acting on the full horizontal projected area of the building. This method may be used for any structure less than 200 ft. (61 m) high, except for gabled rigid frames.



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.

**shoved joint**  
A head joint formed by applying mortar to the end of a masonry unit and forcing it in 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.

**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.

**corbeling**  
An overlapping arrangement of bricks or stones in which each course steps upward and outward from the vertical face of a wall.

**tooled joint**  
A weather-resistant mortar joint compressed and shaped with any tool other than a trowel.

**concave joint**  
A curved, hollowed mortar joint formed by a rounded bar.

**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 given depth with a square-edged tool before hardening.

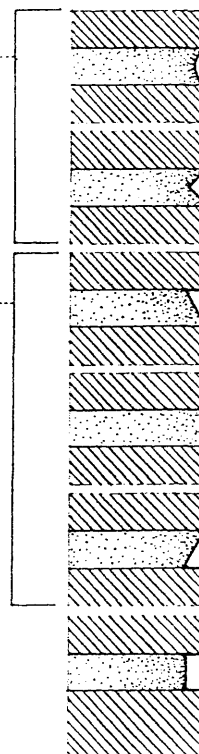
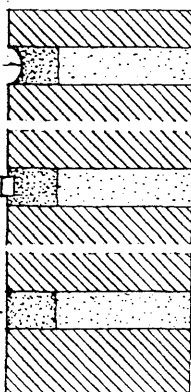
**point**  
To fill and finish the surface of a masonry joint with mortar after the masonry has been laid, either to finish the joint or to repair a defective joint.

**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.

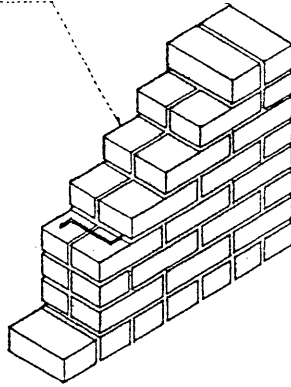
**flat-joint pointing**  
Pointing having flush joints of common mortar.



# 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

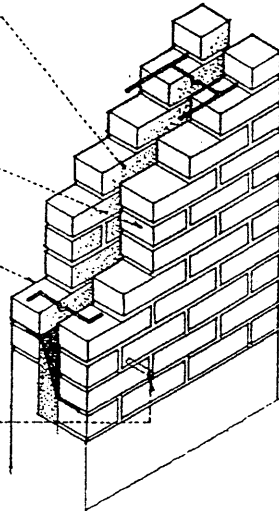
An ornamental or protective layer, as the outer wythe of a masonry wall.

## 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

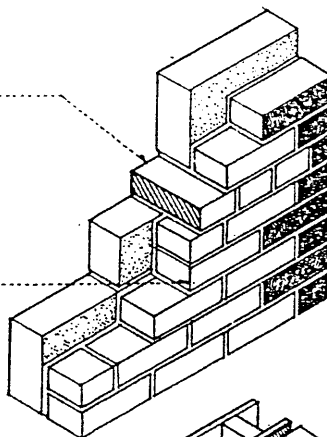
A wall having a masonry facing bonded to a backing so as to exert a common action under load.

## 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.

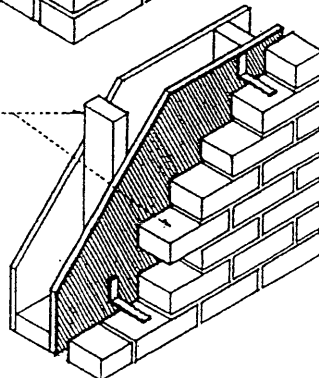


## veneered wall

A wall having a nonstructural facing attached but not bonded to a supporting structure.

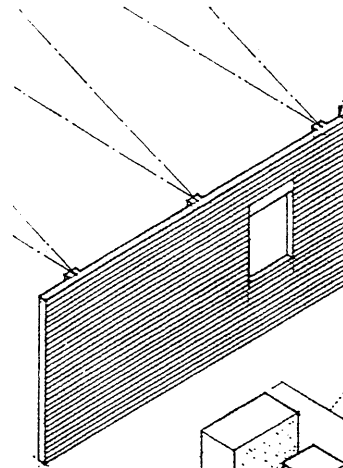
## anchored veneer

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 8-in. (203-mm) pilasters to support roof trusses.



## composite wall

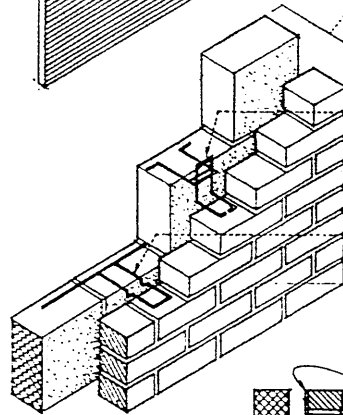
A masonry wall having at least one wythe dissimilar to the other wythe or wythes with respect to type or grade of masonry unit or mortar.

## adjustable tie

A metal tie consisting of two interlocking parts which enable it to adapt to bed joints at different elevations.

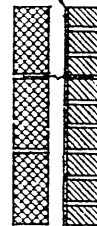
## tie

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 parge 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.

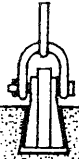


## panel wall

A non-load-bearing exterior masonry wall wholly supported at each story.

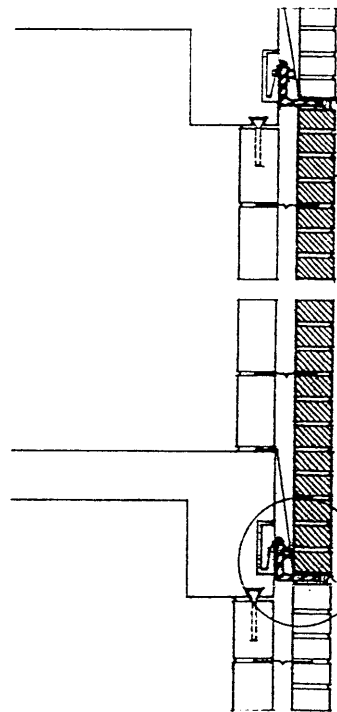
## lewis

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-retentivity.

# 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, a catalyst, and fine aggregate.

# nonstaining mortar

A mortar having a low 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, calx, 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 hardened.

# 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.

# Type M mortar

A high-strength mortar recommended for use in reinforced masonry below grade or in contact with the earth, as foundation and retaining walls subject to frost action or to high lateral or compressive loads.

# Type S mortar

A medium-high-strength mortar recommended for use in masonry where bond and lateral strength are more important than compressive strength.

# Type N mortar

A medium-strength mortar recommended for general use in exposed masonry above grade where high compressive and lateral strength are not required.

# Type O mortar

A low-strength mortar suitable for use in interior non-load-bearing walls and partitions.

# Type K mortar

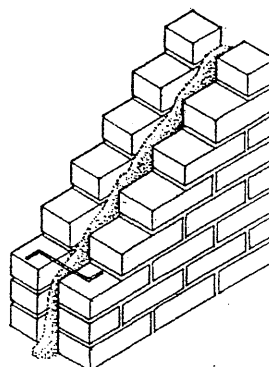
A very-low-strength mortar suitable only for use in interior non-load-bearing walls where permitted by the building code.

# grout

A fluid cement mortar that will flow easily without segregation of the ingredients, used to fill narrow cavities in masonry and consolidate the adjoining materials into a solid mass.

# bond

The adhesion between mortar or grout and the masonry units or steel reinforcement being cemented.



# grouted masonry

A wall constructed of brick or concrete brick units with all interior joints being filled with grout as the work progresses.

# high-lift grouting

A technique for grouting a masonry wall constructed a story at a time in lifts not exceeding 6 feet (1.8 m).

# low-lift grouting

A technique for grouting a masonry wall in lifts not exceeding six times the width of the grout space or a maximum of 8 inches (203 mm) as the wall is built.

# grout pour

The total height of masonry to be filled with grout before the erection of additional masonry, consisting of one or more grout lifts.

# grout lift

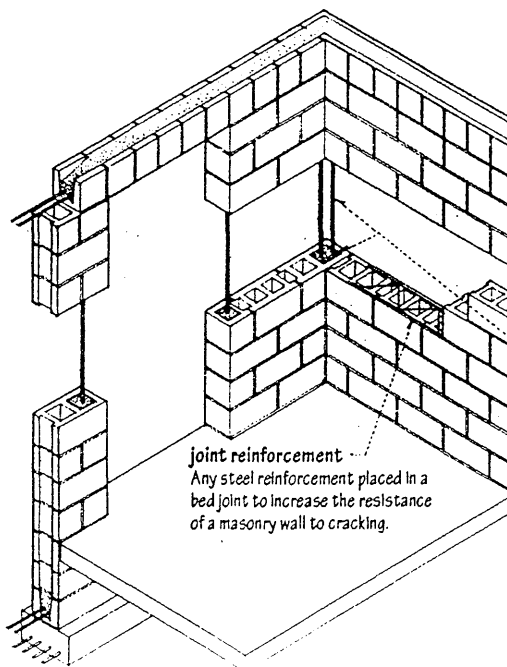
An increment of grout height within a total grout pour.

# cleanout

Any of a series of temporary openings at the bottom of a masonry wall large enough to permit the removal of debris or obstructions from a cavity or cell prior to grouting.

# reinforced grouted masonry

A masonry wall constructed with horizontal and vertical steel reinforcement fully embedded in grout for increased resistance to buckling and lateral wind and seismic loads.



# hollow unit masonry

A wall constructed of hollow masonry units laid and set with mortar, with adjacent wythes bonded by masonry headers or metal ties.

# reinforced hollow-unit masonry

Hollow unit masonry having certain cells continuously filled with concrete or grout, in which reinforcing steel is embedded for increased resistance to buckling and lateral wind and seismic loads.

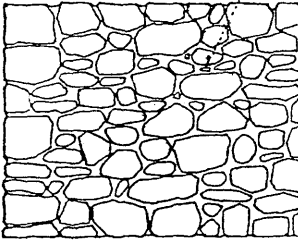
# joint reinforcement

Any steel reinforcement placed in a bed joint to increase the resistance of a masonry wall to cracking.

# MASONRY

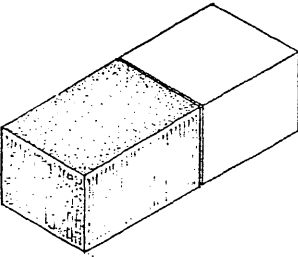
## rubble

Rough fragments of broken stone or the masonry built of such stones.



## random rubble

A rubble wall having discontinuous but approximately level beds or courses.

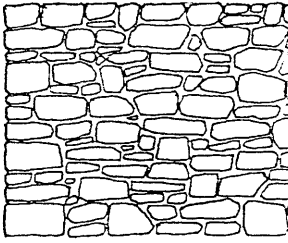


## ashlar

A squared building stone finely dressed on all faces adjacent to those of other stones so as to permit very thin mortar joints.

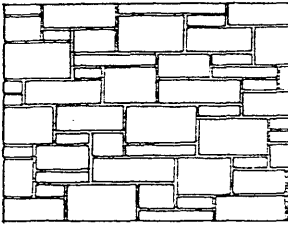
## gallet

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.



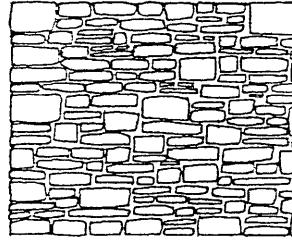
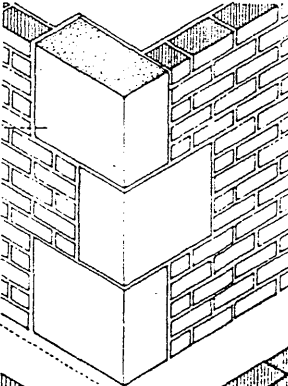
## coursed rubble

A rubble wall having approximately level beds and brought at intervals to continuous level courses.



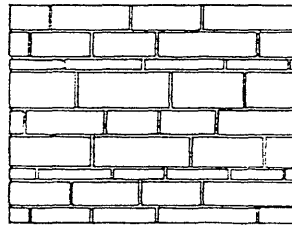
## random ashlar

Ashlar masonry built in discontinuous courses.



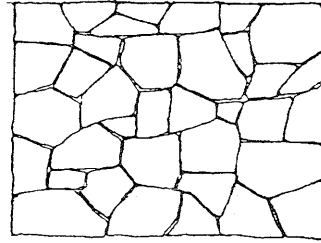
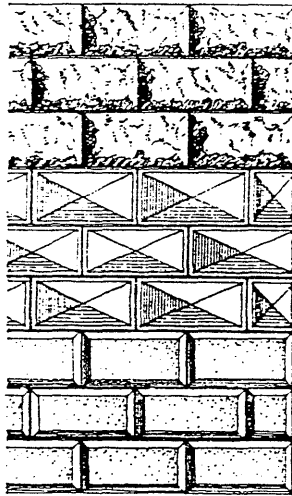
## squared rubble

A rubble wall built of squared stones of varying sizes and coursed at every third or fourth stone.



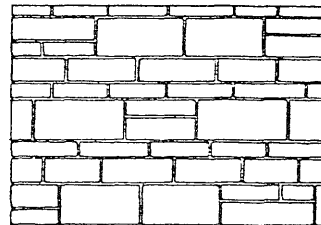
## coursed ashlar

Ashlar masonry built of stones having the same height within each course, but each course varying in height.



## cyclopean

Formed with large, irregular blocks of stones fitted closely together without the use of mortar.



## broken rangework

Ashlar masonry laid in horizontal courses of varying heights, any one of which may be broken at intervals into two or more courses.

## quoins

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

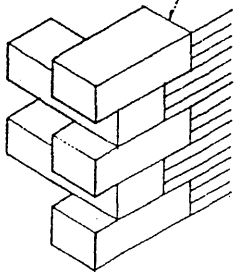
A stone for bonding facing masonry to a masonry backing. Also called binder.

## long-and-short work

An arrangement of rectangular quoins or jambstones set alternately horizontally and vertically.

## in-and-out bond

A masonry bond having headers and stretchers alternating vertically.



## rustication

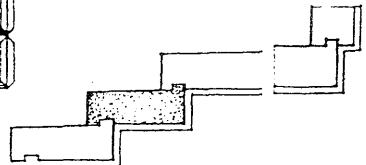
Ashlar masonry having the visible faces of the dressed stones raised or otherwise contrasted with the horizontal and usually the vertical joints, which may be rabbeted, chamfered, or beveled.

## rustic joint

A mortar joint between stones recessed from the adjacent faces between sunken drafts or bevells.

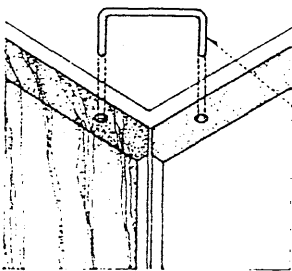
## rustic

Having rough, irregular surfaces and sunken or beveled joints.



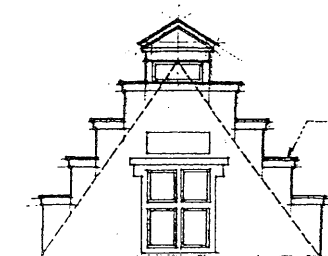
## interlocking joint

A joint in ashlar masonry made by fitting a projection on one stone into a routed groove on the next stone.

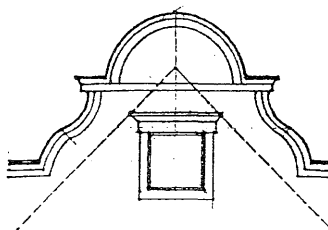


## cramp iron

An iron bar or rod with bent ends for holding together stone masonry units.


**corbie gable**

A gable having corbiesteps.


**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.

**tail in**

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**

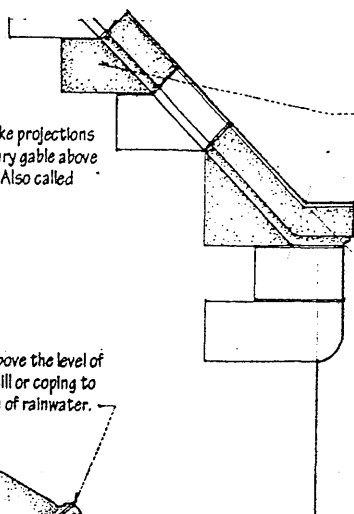
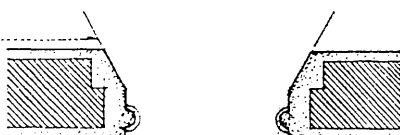
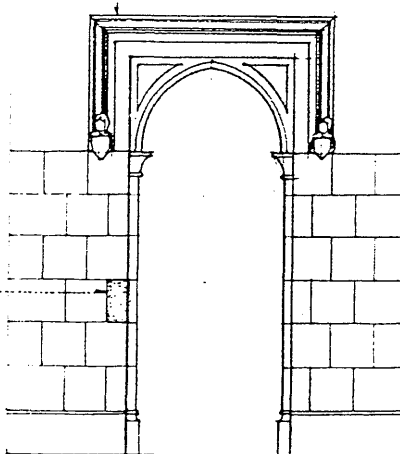
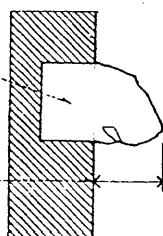
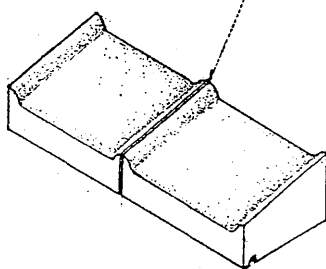
A splayed enlargement of a door or window opening toward the inner face of a wall.

**corbiestep**

Any of a series of steplike projections that terminate a masonry gable above the surface of the roof. Also called crowstep.

**saddle joint**

A vertical joint raised above the level of the washes on a stone sill or coping to prevent the penetration of rainwater.


**capstone**

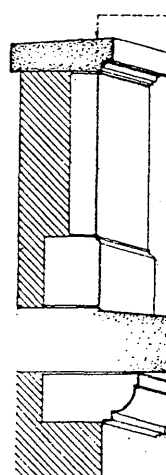
A finishing stone of a structure, as a copestone.

**kneeler**

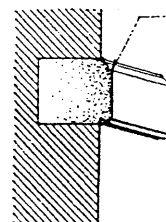
Any of the stones having a sloping top for supporting or forming a gable coping. Also called skew.

**skew corbel**

A stone overhanging at the foot of a gable coping, often serving as a stop for eave gutters or wall cornices.


**copestone**

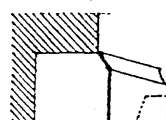
A stone forming a coping.


**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.

**cordons**

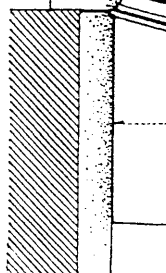
A stringcourse, esp. one having little or no projection.


**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.

# MASONRY

## 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 6 in. (102 or 152 mm).

## bullnose 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 pier.

## pilaster block

Any of various concrete masonry units used in constructing a plain or reinforced masonry pilaster.

## 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 slot or rabbet 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 rain water 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 filler, 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.

## scored 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 beveled 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 molding 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 reentrant 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 spaces.

## 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

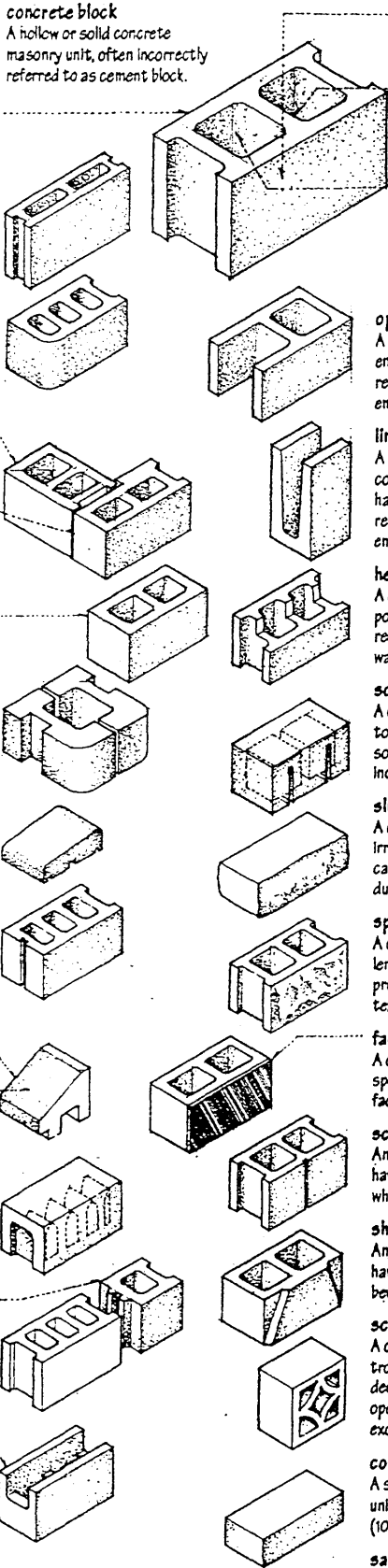
A concrete masonry unit made with sand, gravel, or other dense aggregate and weighing more than 125 pcf (2000 kg/m<sup>3</sup>).

## lightweight block

A concrete masonry unit made with lightweight aggregate, as cinder or expanded slag, and weighing less than 125 pcf (2000 kg/m<sup>3</sup>).

## surface bonding

The bonding of a concrete masonry wall by stacking the units without mortar and troweling on a stucco-like compound of white 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 electrovalent bond.

## positive ion

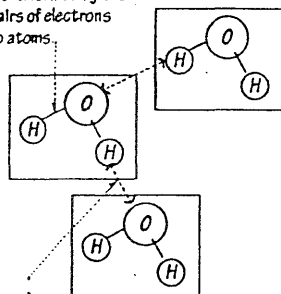
A positively charged ion created by electron loss. Also called cation.

## ion

An electrically charged atom or group of atoms formed by the loss or gain of one or more electrons.

## covalent bond

A chemical bond formed by the sharing of pairs of electrons between two atoms.



## 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.

## liquid

Matter distinguished from the solid or gaseous states by a characteristic readiness to flow, little or no tendency to disperse, and relatively high incompressibility.

## 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.

## inert gas configuration

The stable configuration of an element in which the outer shells of its atoms or ions are filled with the maximum number of electron pairs. Nature moves atoms and ions toward this configuration by capturing, surrendering, or sharing electrons with neighboring atoms or ions in an effort to achieve a relatively inert state of low energy.

## noble gas

Any of the chemically inert gaseous elements: helium, neon, argon, krypton, xenon, and radon. Also called inert gas.

## fluid

A substance, as a gas or liquid, that is capable of flowing, yields easily to pressure, and conforms to the shape of its container.

## matter

That which occupies space, can be perceived by the senses, and constitutes the substance of a physical body.

## shell

Any of up to seven spherical surfaces containing the orbits of electrons of approximately equal energy about the nucleus of an atom.

## electron

A fundamental particle of matter having a negative charge.

## neutron

A fundamental particle having no charge.

## proton

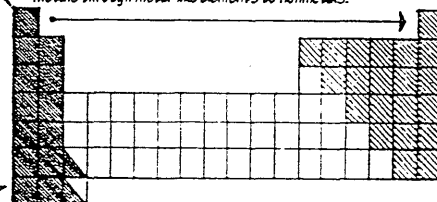
A positively charged particle that is a fundamental constituent of all atomic nuclei.

## periodic table

A tabular arrangement of the chemical elements in related groups, formerly in the order of their atomic weights and now according to their atomic numbers.

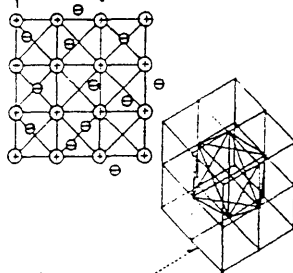
Down a group, elements share certain characteristics and behave in a similar manner because of the way electrons are arranged in their outer shells.

Across a period, elements change gradually from metals through metal-like elements to nonmetals.



## metallic bond

A chemical bond characteristic of metals, produced by the sharing of valence electrons which move freely through the lattice of a usually stable crystalline structure.



## lattice

A regular pattern of isolated points in space showing 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.

## gas

Matter having neither independent shape nor volume, possessing perfect molecular mobility and the tendency to expand indefinitely.

## solid

Matter having relative firmness, coherence of particles, or persistence of form.

## evaporate

To change or convert from a liquid or solid 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.

# MATERIAL

## property

An essential or distinctive attribute or quality belonging specifically to the constitution of, or found in, the behavior of a thing.

## mechanical property

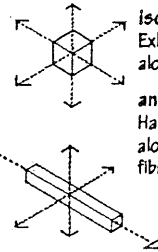
Any of the physical properties of a material that exhibit a response to applied forces.

## strength

The capability of a material to resist the forces imposed on it, esp. the ability to sustain a high stress without yielding or rupturing.

## strength of materials

The study of the relationship between applied external forces and the internal effects produced by these forces in a body.



## isotropic

Exhibiting the same physical properties along all axes.

## anisotropic

Having different physical properties along different axes, as wood and other fibrous materials.

## tension

The act of stretching or state of being pulled apart, resulting in the elongation of an elastic body.

## tensile force

An applied force producing or tending to produce tension in an elastic body.

## axial force

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, torsion, or shear. Also called axial load.

## axial stress

The tensile or compressive stress that develops to resist an axial force, assumed to be normal to and uniformly distributed over the area of the cross section. Also called direct stress, normal stress.

## compression

The act of shortening or state of being pushed together, resulting in a reduction in size or volume of an elastic body.

## compressive force

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.

## stress

The internal resistance or reaction of an elastic body to external forces applied to it, equal to the ratio of force to area and expressed in units of force per unit of cross-sectional area. Also called unit stress.

## tensile stress

The axial stress that develops at the cross section of an elastic body to resist the collinear tensile forces tending to elongate it.

## tensile strain

The elongation of a unit length of material produced by a tensile stress.

## strain

The deformation of a body under the action of an applied force. Strain is a dimensionless quantity, equal to the ratio of the change in size or shape to the original size or shape of a stressed element.

## Young's modulus

A coefficient of elasticity of a material, expressing the ratio of longitudinal stress to the corresponding longitudinal strain caused by the stress.

## Poisson's ratio

The ratio of lateral strain to the corresponding longitudinal strain in an elastic body under longitudinal stress.

## 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 disintegration occurs. The compression test is used for brittle materials since their low tensile strength is difficult to measure accurately.

## strain gauge

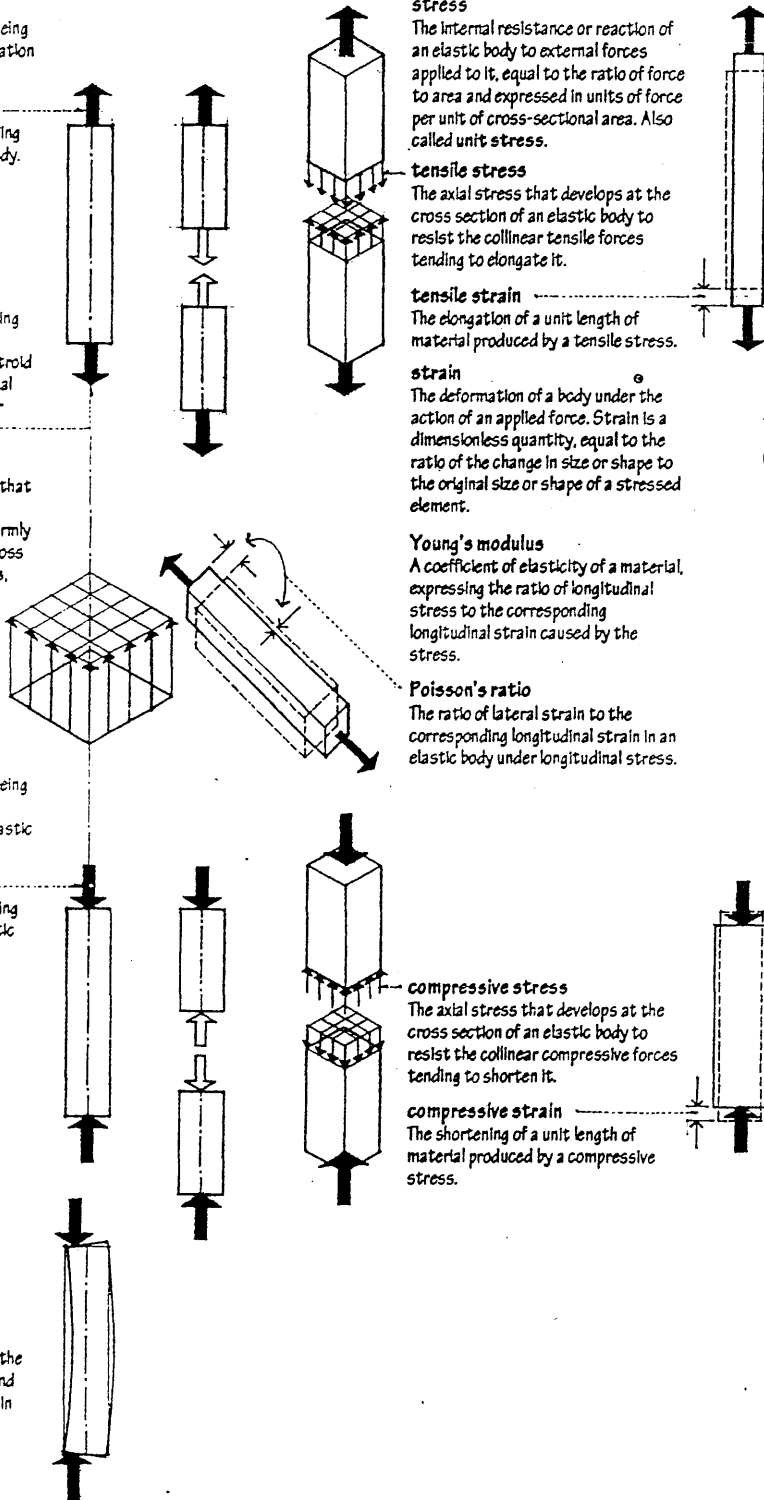
An instrument for measuring minute deformations in a test specimen caused by tension, compression, bending, or twisting. Also called extensometer.

## bulk modulus

A coefficient of elasticity of a material, expressing the ratio between a pressure and the corresponding fractional change in volume produced.

## compressibility

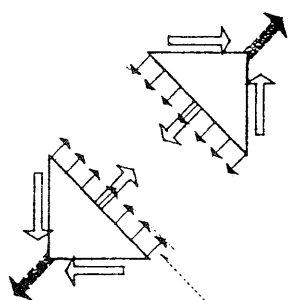
The reciprocal of bulk modulus, equal to the ratio of the fractional change in volume to the pressure applied to a substance.





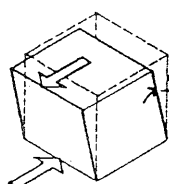
## shearing force

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.

## 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.

## shear

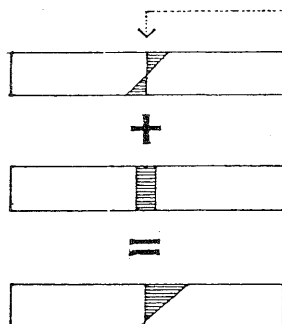
The lateral deformation produced in a body by an external force that causes one part of the body to slide relative to an adjacent part in a direction parallel to their plane of contact.

## shear force

An applied force producing or tending to produce shear in a body.

## 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.



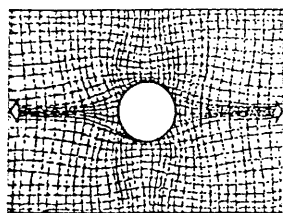
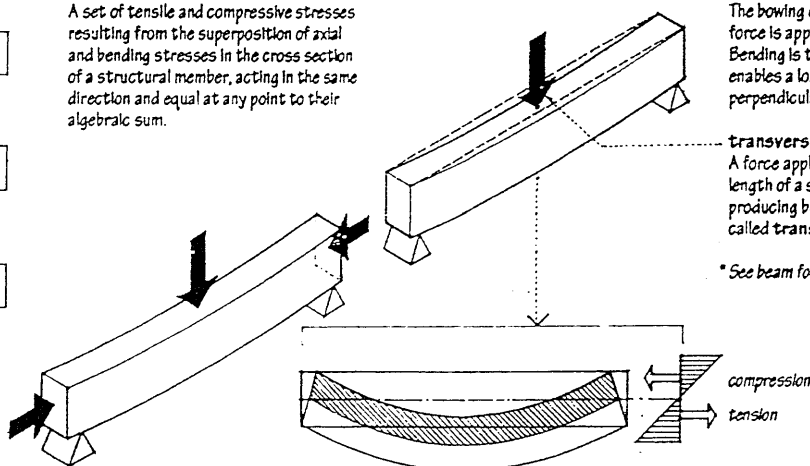
## bending

The bowing of an elastic body as an external force is applied transversely to its length. Bending is the structural mechanism that enables a load to be channeled in a direction perpendicular to its application.

## transverse force

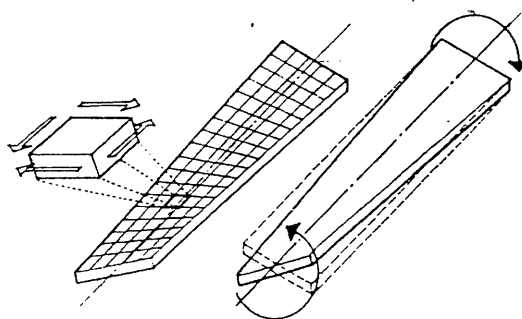
A force applied perpendicular to the length of a structural member, producing bending and shear. Also called transverse load.

\* See beam for bending stresses.



## 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.



## torque

The moment of a force system that causes or tends to cause rotation or torsion.

## torsion

The twisting of an elastic body about its longitudinal axis caused by two equal and opposite torques, producing shearing stresses in the body.

# MATERIAL

## 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.

### deformation

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

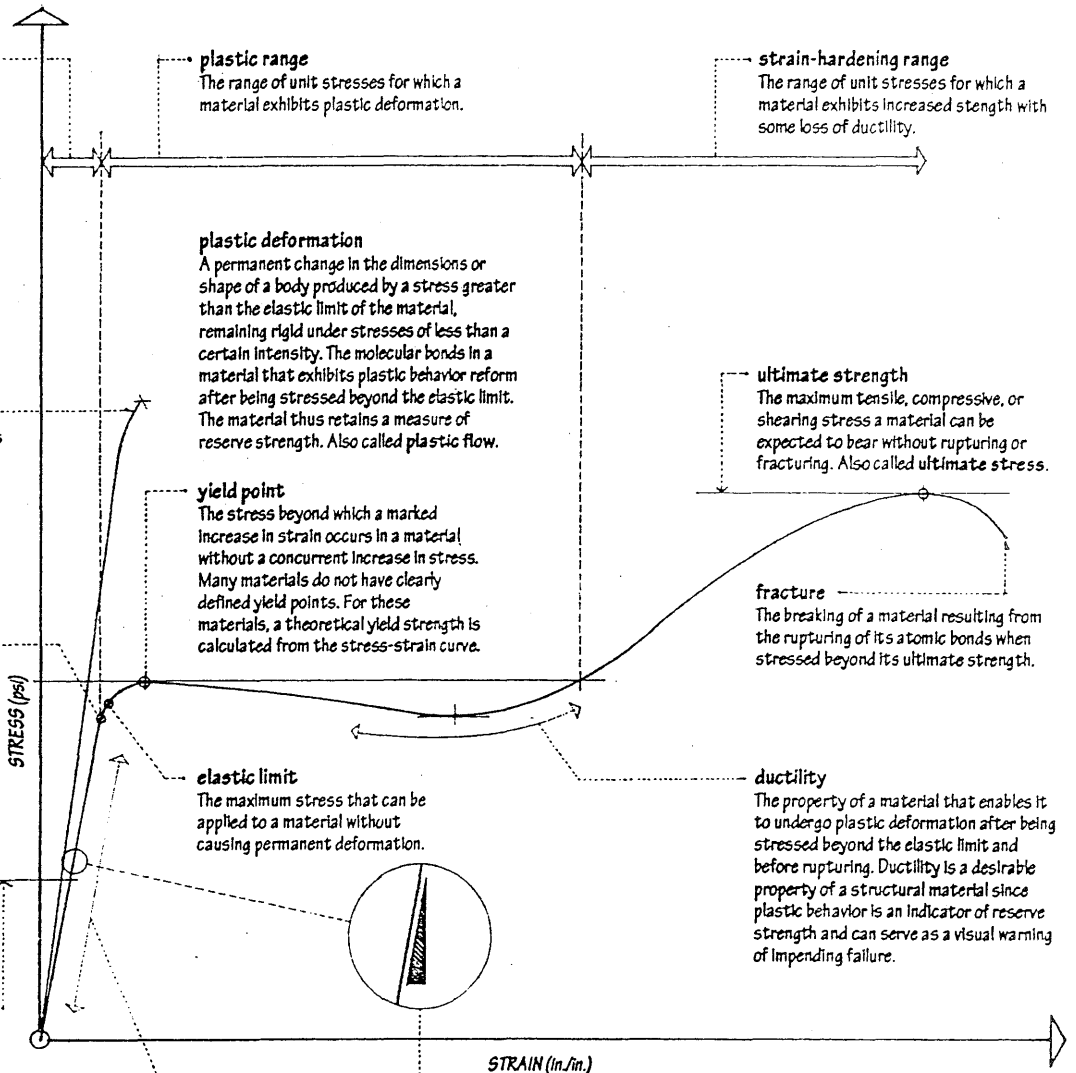
A measure of a material's resistance to deformation when stressed within its elastic range.

### 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.



### plastic range

The range of unit stresses for which a material exhibits plastic deformation.

### strain-hardening range

The range of unit stresses for which a material exhibits increased strength with some loss of ductility.

### 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 exhibits 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.

### ultimate strength

The maximum tensile, compressive, or shearing 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.

### elastic limit

The maximum stress that can be applied to a material without causing permanent deformation.

### 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

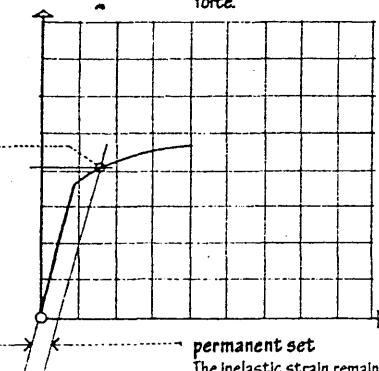
The property of a material that enables it to deform in response to an applied force and to recover its original size and shape upon removal of the force.

### 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.

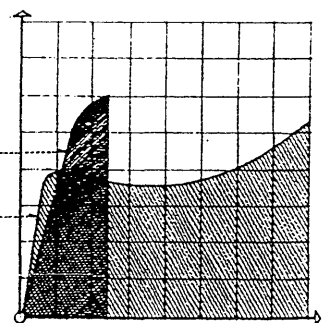


### permanent set

The inelastic strain remaining in a material after complete release of the stress producing the deformation.

### strong but brittle

### ductile and tough

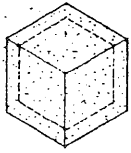


### toughness

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.

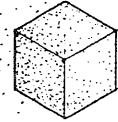
**moisture expansion**

An increase in the bulk of a material caused by the absorption of water or water vapor. Also called balking.



**absorption**

The taking in or reception of a gas or liquid by molecular or chemical action.

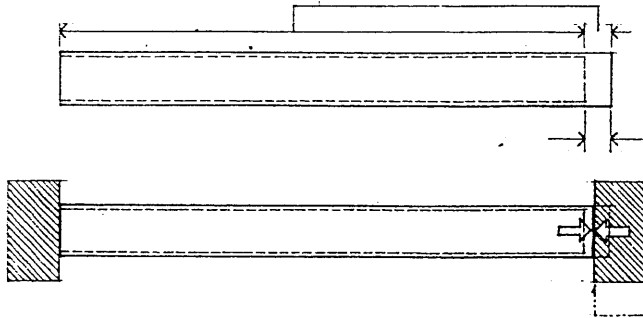


**adsorption**

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.

**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**

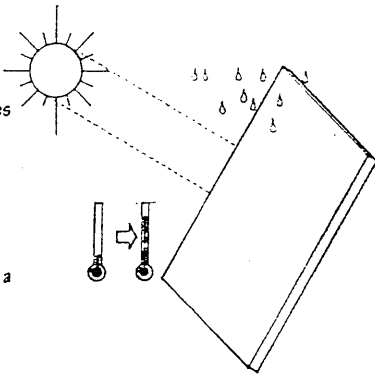
The sudden stress a rapid change in temperature can produce in a material.

**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.

**abrasion resistance**

The property of a material that enables it to resist being worn away by friction when rubbed with another object. Abrasion resistance is a measure of toughness rather than hardness and is a necessary quality of flooring materials and surface finishes.

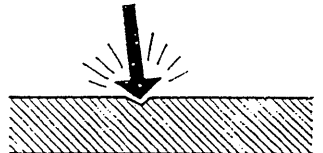


**abrasion-resistance index**

A measure of the abrasion resistance of a material, commonly expressed as the depth of penetration or material loss after testing with a weighted abrasive wheel for a specified number of cycles.

**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 conoidal diamond indenter, 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.

**strain-rate effect**

The brittle behavior an increased rate of load application can cause in a normally ductile material.

**temperature effect**

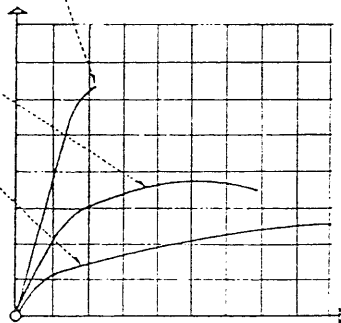
The brittle behavior low temperatures can cause in a normally ductile material.

**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.



**fatigue**

The weakening or failure of a material at a stress below the elastic limit when subjected to a repeated series of stresses.

**fatigue limit**

The maximum stress to which a material can be subjected for an indefinite number of cycles without failing.

**fatigue ratio**

The ratio between the fatigue limit and the tensile strength of a material. Also called endurance ratio.

# MEASURE

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.

## 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.

## 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 1/299,972,458 of the distance light travels in a vacuum in one second. Abbr.: m

## kilometer

A unit of length and distance equal to 1000 meters and equivalent to 3280.8 feet or 0.621 mile. Abbr.: km

## are

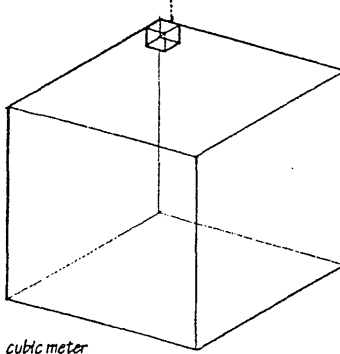
A metric unit of area equal to 1/100 of a hectare, 100 square meters, or 119.6 square yards. Abbr.: a

## hectare

A metric unit of area equal to 10,000 square meters or 2.47 acres. Abbr.: ha

## liter

A metric unit of capacity equal to 1/1000 of a cubic meter or 61.02 cubic inches. Abbr.: L



cubic meter

## scale

A system of ordered marks laid down at known intervals and used as a standard reference in measuring.

## 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. Abbr.: cm

## millimeter

A metric unit of length equal to 1/1000 of a meter or 0.03937 of an inch. Abbr.: mm

## micron

The millionth part of a meter. Also called micrometer. Symbol:  $\mu$ ,  $\mu$

## foot

A unit of length originally derived from the length of the human foot, divided into 12 inches and equal to 304.8 millimeters. Abbr.: ft.

## inch

A unit of length, 1/12th of a foot, equivalent to 25.4 millimeters. Abbr.: in.

## mil

A unit of length equal to 0.001 of an inch or 0.0254 mm, used in measuring the diameter of wires 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. Abbr.: yd.

## rod

A unit of length equal to 5 1/2 yards or 16 1/2 feet, and equivalent to 5.029 meters.

## mile

A unit of distance on land equal to 5280 feet or 1760 yards, and equivalent to 1.609 km. Also called statute mile. Abbr.: mi

## nautical mile

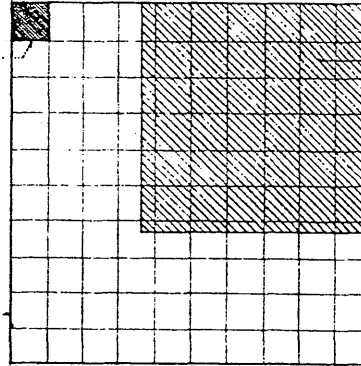
A unit of distance used in sea or air navigation, equal to 1.852 kilometers or about 6,076 feet. Also called air mile.

## 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.



## 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.

## cubic measure

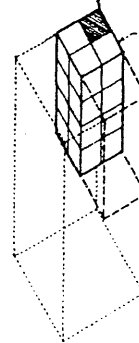
A unit or system of units for measuring volume or capacity, derived from units of linear measure.

## volume

The size or extent of a three-dimensional object or region of space, measured in cubic units.

## milliliter

A metric unit of capacity equal to 1/1000 of a liter or 0.0162 cubic inch. Abbr.: ml



## fluid ounce

A unit of liquid capacity equal to 1.805 cubic inches or 29.573 milliliters. Abbr.: fl oz

## pint

A unit of liquid capacity equal to 16 fluid ounces, 28.875 cubic inches, or 0.473 liter. Abbr.: pt.

## quart

A unit of liquid capacity equal to two pints, 57.75 cubic inches, or 0.946 liter. Abbr.: qt.

## gallon

A unit of liquid capacity equal to 4 quarts, 231 cubic inches, or 3.785 liters. Abbr.: 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  $1.01325 \times 10^5 \text{ N/m}^2$  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 745.7 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, which equals one Btu, or 4.1858 joules, which equals one calorie.

**metric ton**  
A unit of mass equal to 1,000 kilograms and equivalent to 2,204.62 avoirdupois pounds. Also called tonne. Abbr.: m.t.

**gram**  
A metric unit of mass equal to  $1/1000$  of a kilogram or 0.035 ounce. Abbr.: g

**mass**  
A measure of a body's inertia, as determined by the quantity of material it contains and its weight in a field of constant gravitational acceleration. Abbr.: M

**kilogram**  
The base SI unit of mass, equal to the mass of a platinum-iridium cylinder kept at the International Bureau of Weights and Measures near Paris; equivalent to 2.205 avoirdupois pounds. Abbr.: kg

**pound**  
A unit of weight equal to 16 ounces and equivalent to 0.453 kg. Abbr.: lb.

**kip**  
A unit of weight equal to 1000 pounds or 453.6 kg.

**ton**  
A unit of weight equal to 2,000 pounds or 0.907 metric ton. Also called short ton.

**weight**  
The gravitational force exerted by the earth on a body, equal to the mass of the body times the local acceleration of gravity.

**gravity**  
The central force of attraction exerted by the mass of the earth on a body near its surface.

**acceleration of gravity**  
The acceleration of a freely falling body in the earth's gravitational field, having an approximate value at sea level of 32 ft. (9.8 m) per second per second.

**Boyle's law**  
The principle that, at 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

**pressure**  
The force exerted over a surface, measured as force per unit area.

**pascal**  
The SI unit of pressure equal to one newton per square meter. Abbr.: Pa

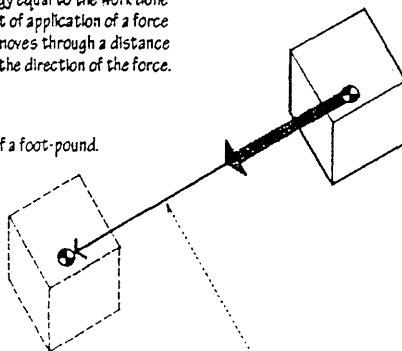
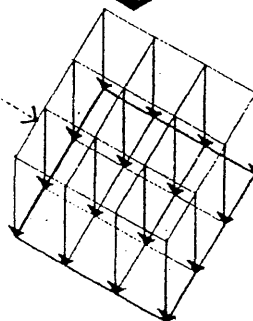
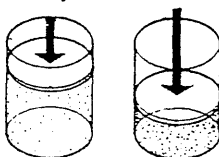
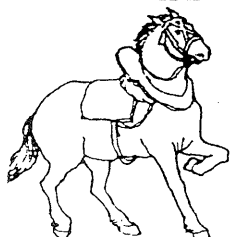
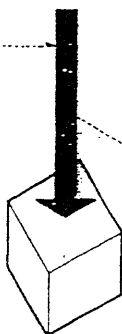
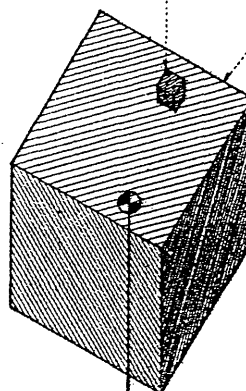
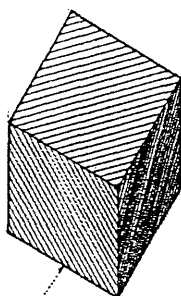
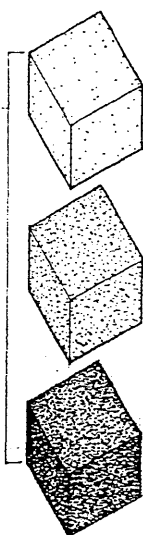
**energy**  
The work a physical system is capable of doing in changing from its actual state to a specified reference state.

**joule**  
The SI unit of work or energy equal to the work done when the point of application of a force of one newton moves through a distance of one meter in the direction of the force; approximately 0.7375 ft-lb. Also called newton-meter. Abbr.: J

**watt-hour**  
A unit of energy equal to energy of one watt operating for one hour and equivalent to 3,600 joules. Abbr.: Wh

**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 component 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.

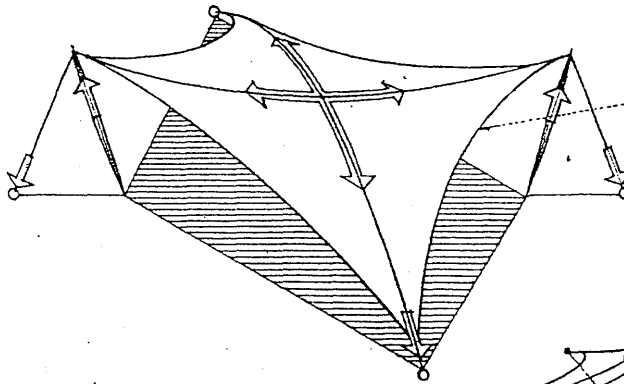


# MEMBRANE

A thin, flexible surface that carries loads primarily through the development of tensile stresses.

## tent structure

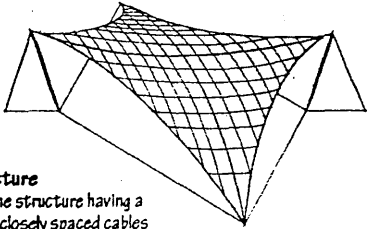
A membrane structure prestressed by externally applied forces so that it is held completely taut under all anticipated load conditions. To avoid extremely high tensile forces, a membrane structure should have relatively sharp curvatures in opposite directions.



**reinforcing edge cable**  
A cable stiffening the free edges of a prestressed membrane structure.

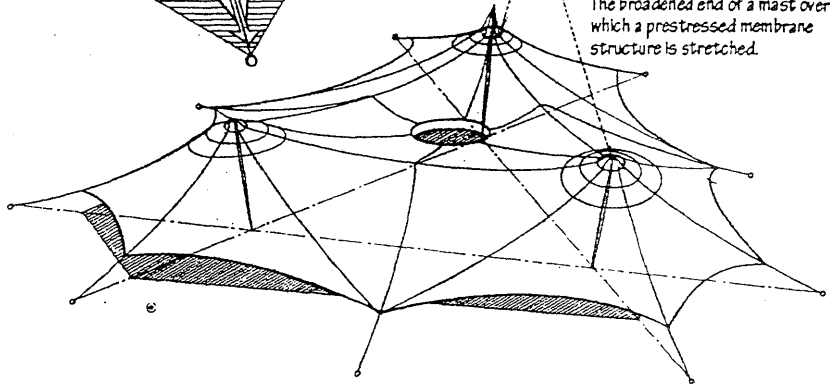
**cable loop**  
A reinforcing edge cable tied to the mast support of a membrane structure.

**distribution cap**  
The broadened end of a mast over which a prestressed membrane structure is stretched.



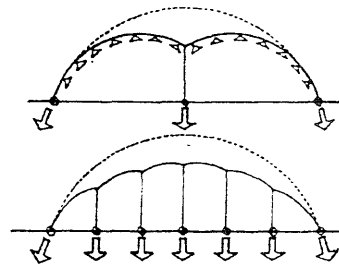
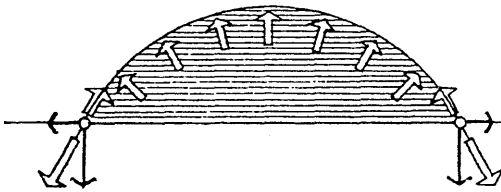
## net structure

A membrane structure having a surface of closely spaced cables instead of a fabric material.



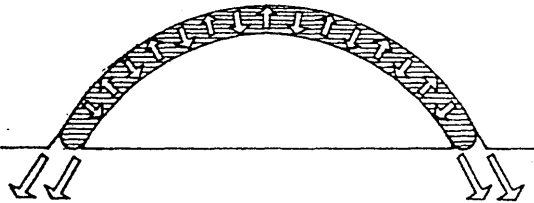
## pneumatic structure

A membrane structure that is placed in tension and stabilized by the pressure of compressed air.



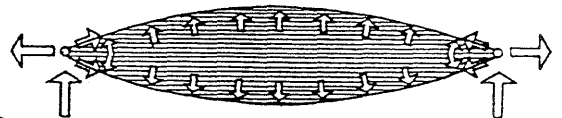
## air-supported structure

A pneumatic 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.



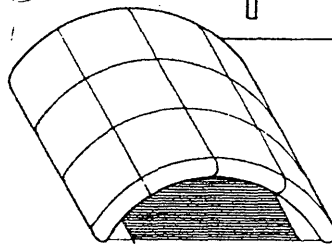
## cable-restrained pneumatic structure

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.

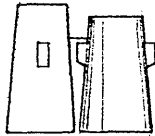


**ingot**

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.



**bloom**

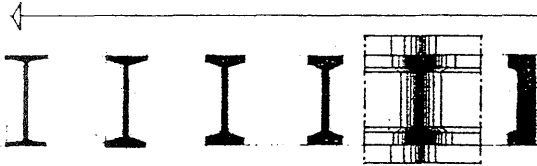
A bar of steel reduced from an ingot to dimensions suitable for further rolling.

**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-roll**

To roll metal at a heat high enough to permit recrystallization.

**hot-rolled finish**

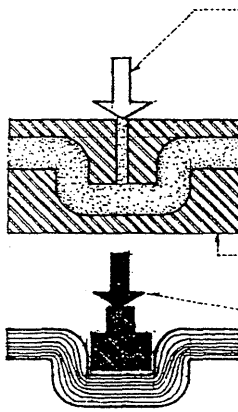
The dark, oxidized, relatively rough finish obtained by rolling metal while hot.

**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.



**die casting**

The process or product of forcing molten metal into a metallic mold under hydraulic pressure to give it a particular shape or form.

**casting**

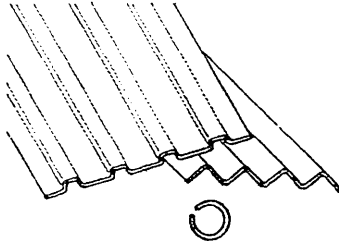
The process or product of forming a material into a particular shape by pouring it into a mold in a fluid state and letting it harden.

**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.



**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 in a liquid 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**

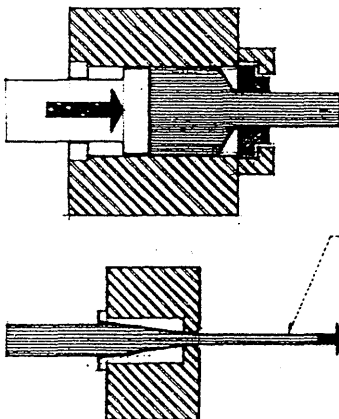
The tempering of a metal at a temperature high enough to relieve residual stresses, followed by slow, uniform cooling.

**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.



**cold-roll**

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 striated 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 preheating, 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.

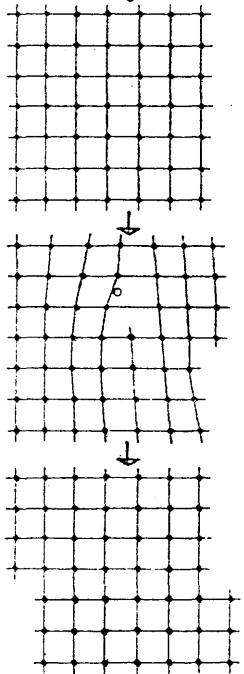
Any of a class of elementary substances, as gold, silver, or copper, all of which are crystalline when solid and many of which are characterized by opacity, ductility, conductivity, and a unique luster when freshly fractured.

**hot-working**

The working of a metal at a temperature high enough to permit recrystallization.

**recrystallize**

To acquire a new granular structure with new crystals because of plastic deformation, as when worked after being heated.



**cold-working**

The working of metal below the temperature at which recrystallization occurs, as in drawing, pressing, or stamping.

## METAL

### ferrous metal

A metal containing iron as a principal element.

### iron

A malleable, ductile, magnetic, silver-white metallic element from which pig iron and steel are made. Symbol: Fe

### pig iron

Crude iron that is drawn from a blast furnace and cast into pigs in preparation for conversion into cast iron, wrought iron, or steel.

### cast iron

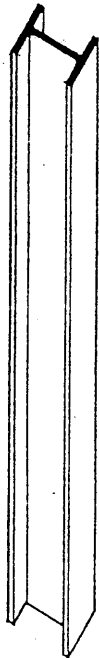
A hard, brittle, nonmalleable iron-based alloy containing 2.0% to 4.5% carbon and 0.5% to 3% silicon, cast in a sand mold and machined to make many building products.

### 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 cast iron and more than that of wrought iron, and having qualities of strength, hardness, and elasticity varying according to composition and heat treatment.



### smelt

To melt or fuse ore in order to separate the metal constituents.

### pig

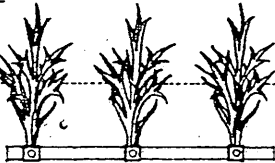
An oblong mass of metal that has been poured while still molten into a mold of sand, esp. such a mass of iron from a blast furnace.

### 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 hardness 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

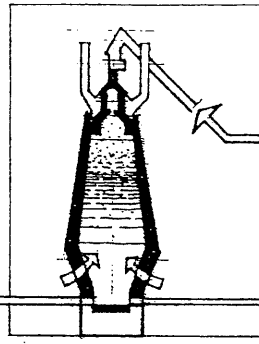
Carbon steel to which various elements, as chromium, cobalt, copper, manganese, molybdenum, nickel, tungsten, or vanadium, have been added in a sufficient amount to obtain particular physical or chemical properties.

### 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.



A mixture of iron ore, limestone, and coke

### coke

The solid residue of coal left after destructive distillation, used as a fuel.

### 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 vitrified matter left as a residue from the smelting of a metallic ore. Also called cinder.



### mild steel

A low-carbon steel containing from 0.15% to 0.25% carbon. Also called soft steel.

### medium steel

A carbon steel containing from 0.25% to 0.45% carbon.

### hard steel

A high-carbon steel containing from 0.45% to 0.85% carbon.

### spring steel

A high-carbon steel containing 0.85% to 1.80% carbon.

### stainless steel

An alloy steel containing a minimum of 12% chromium, sometimes with nickel, manganese, or molybdenum as additional alloying elements, so as to be highly resistant to corrosion.

### high-strength low-alloy steel

Any of a group of low-carbon steels containing less than 2% alloys in a chemical composition specifically developed for increased strength, ductility, and resistance to corrosion.

### weathering steel

A high-strength, low-alloy steel that forms an oxide coating when exposed to rain or moisture in the atmosphere, which adheres firmly to the base metal and protects it from further corrosion. Structures using weathering steel should be detailed to prevent the small amounts of oxide carried off by rainwater from staining adjoining materials.





**rust**

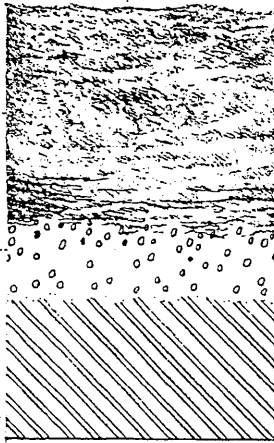
The reddish brittle coating formed on the surface of iron esp. when exposed to moisture and air, consisting essentially of hydrated ferric oxide formed by oxidation.

**oxidation**

The process or result of combining with oxygen to form an oxide.

**oxide**

A binary compound of oxygen with another element.



**noble metal**

A metal, as gold, silver, and mercury, that resists oxidation when heated in air, and solution by inorganic acids.

cathode  
(most noble)

— GOLD & PLATINUM  
TITANIUM  
SILVER  
STAINLESS STEEL  
BRONZE  
COPPER  
BRASS  
NICKEL  
TIN  
LEAD  
IRON & STEEL  
CADMIUM  
ALUMINUM  
ZINC  
+ MAGNESIUM

(least noble)

anode

**sacrificial anode**

An anode that is attached to a metal object subject to electrolysis and is decomposed instead of the object.

**corrosion**

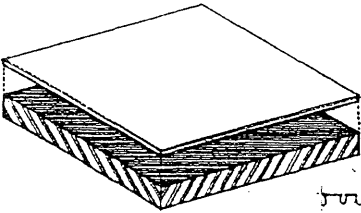
The gradual deterioration of metal by chemical action, as when exposed to weather, moisture, or other corroding agents.

**galvanic corrosion**

An accelerated corrosive action that takes place when dissimilar metals are in contact in the presence of an electrolyte.

**galvanic series**

A list of metals arranged in order from least noble to most noble. The farther apart two metals are on the list, the more susceptible the least noble one is to corrosive deterioration.



**cladding**

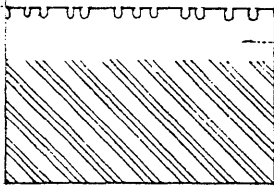
The process or product of bonding one metal to another, usually to protect the inner metal from corrosion.

**pickle**

An acid or other chemical solution in which a metal object is dipped to remove oxide scale or other adhering substances.

**bonderize**

To coat steel with an anticorrosive phosphate solution in preparation for the application of paint, enamel, or lacquer.



**anodize**

To coat a metal, esp. aluminum or magnesium, with a hard, noncorrosive film by electrolytic or chemical action.

**chrome**

To coat or plate a metal surface with a compound of chromium. Also called chromeplate.

**chromium**

A lustrous, hard, brittle metallic element used in alloy steels for hardness and corrosion resistance, and for electroplating other metals.

**galvanize**

To coat metal, esp. iron or steel, with zinc, esp. to immerse in molten zinc to produce a coating of zinc-iron alloy.

**hot-dip 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

**tinplate**

Thin iron or steel sheet plated with tin for protection against oxidation.

**tin**

A lustrous, low-melting, bluish-white metallic element that is malleable and ductile at ordinary temperatures and used in plating and in making alloys and soft solders. Symbol: Sn

**cathodic protection**

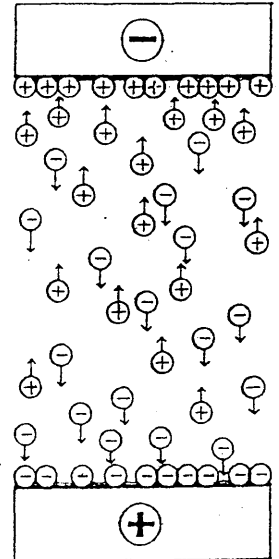
The protection of ferrous metals against electrolysis by the attachment of sacrificial anodes. Also called electrolytic protection.

**electroplate**

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 MC 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 length of each leg 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

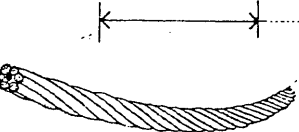
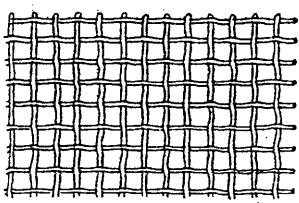
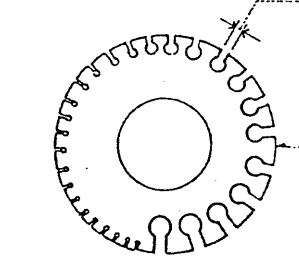
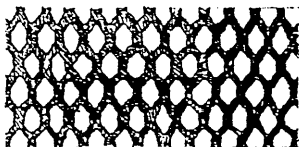
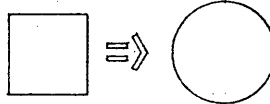
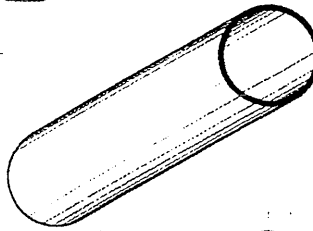
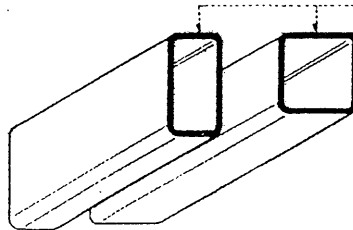
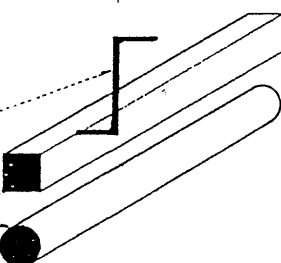
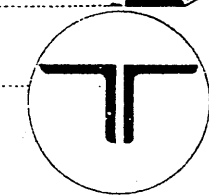
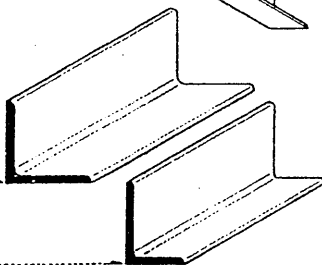
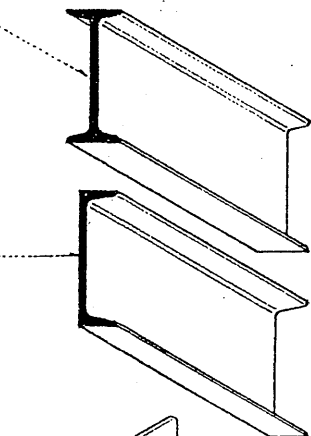
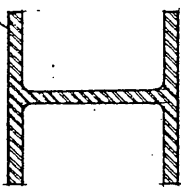
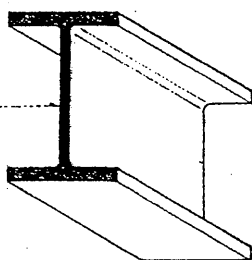
A rolled metal bar having a T-shaped cross section. Also called T-bar.

## zee

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 TS followed by the side dimensions or diameter and the wall thickness.

## standard pipe

A structural steel pipe of standard weight and wall thickness, designated as Pipe (nominal inside diameter) Std.

## extra-strong pipe

A structural steel pipe having increased wall thickness for greater strength, designated as Pipe (nominal inside diameter) X-Strong.

## double-extra-strong pipe

A structural steel pipe having a wall thickness greater than that of extra-strong pipe, designated as Pipe (nominal inside diameter) XX-Strong.

## 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 wafflelike 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 other 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, gage.

## 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, sieves, 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**

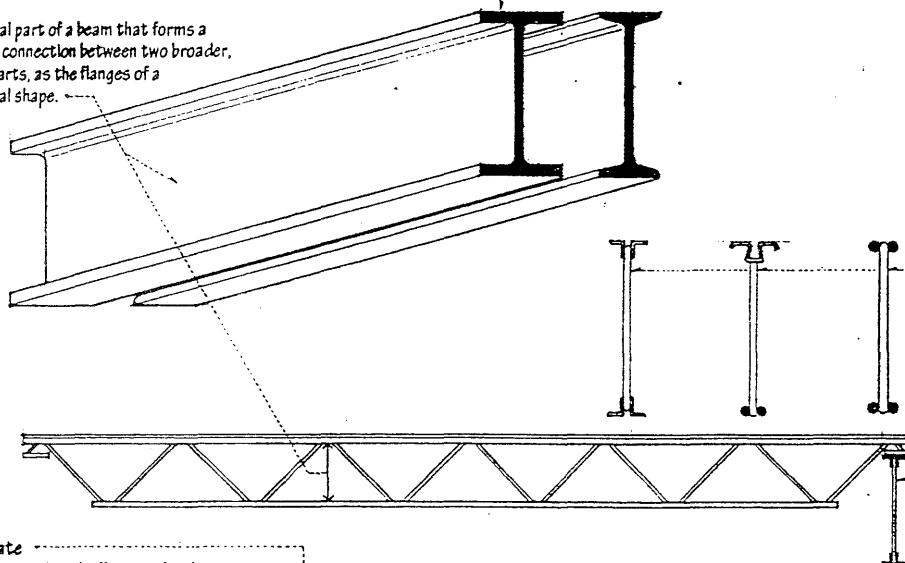
A rolled or extruded metal beam having a cross section resembling the capital letter I.

**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 zigzag pattern between the upper and lower chords. LH- and DLH-Series joists have heavier web and chord members for increased loads and spans. Also called *bar joist*.

**joist girder**

A trussed girder for supporting open-web steel joists.

**cover plate**

A plate fastened to the flanges of a plate girder to increase its section modulus in areas subject to high-bending stresses.

**flange angle**

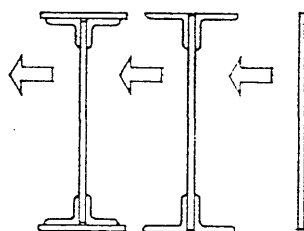
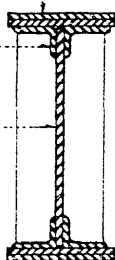
One of the angles forming the top or bottom flange of a plate girder.

**web plate**

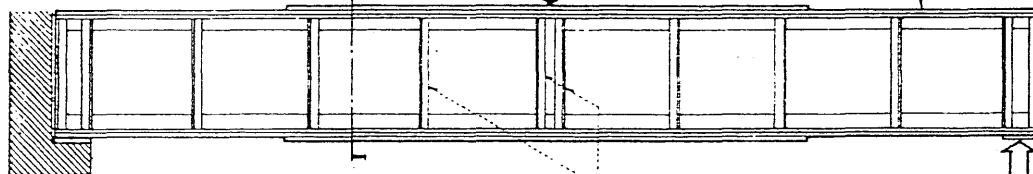
A steel plate forming the web of a plate girder.

**shear plate**

A plate fastened to the web of a plate girder to increase its resistance to shearing stresses.

**plate girder**

A steel girder built up from plates or shapes that are welded or riveted together.

**stiffener**

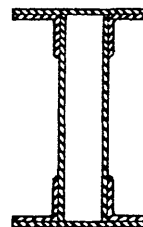
One of a pair of vertical angles fastened to each side of a web plate to stiffen it against buckling.

**bearing stiffener**

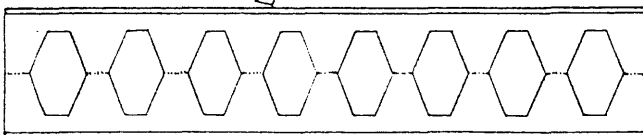
A stiffener angle for the web of a plate girder, placed at a point of support or under a concentrated load.

**intermediate stiffener**

A stiffener angle for the web of a plate girder, placed between bearing stiffeners for increased resistance to diagonal compressive stresses.

**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.

## extensibility

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 airtight. 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

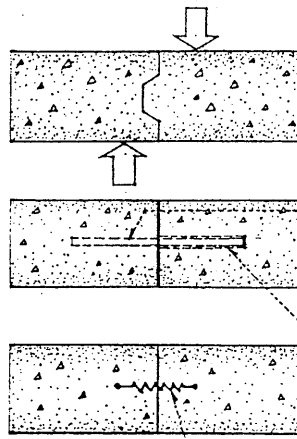
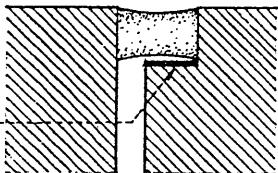
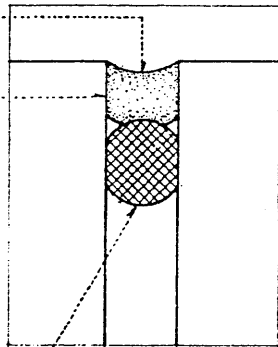
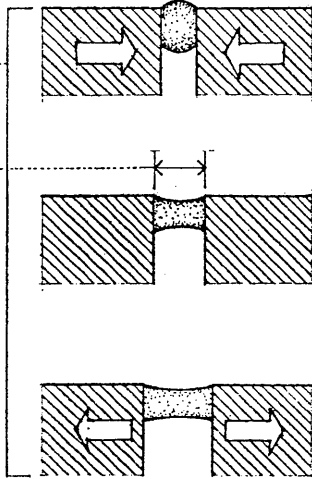
A liquid for improving the adhesion of a sealant to a substrate.

## 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 doweled to provide lateral stability across the joint.

## dowel

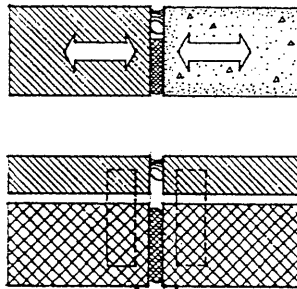
A short reinforcing bar extending equally into two abutting sections of concrete to prevent differential movement.

## 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.

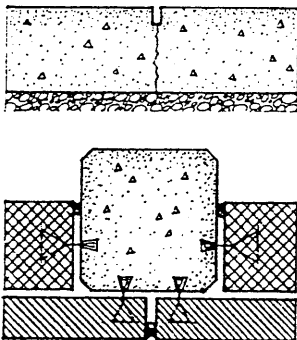


## expansion joint

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.

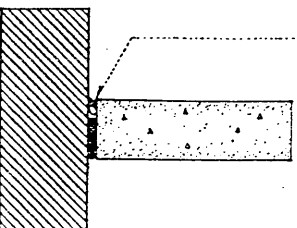
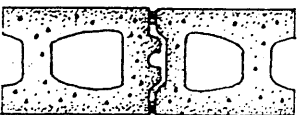


## control joint

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, slablike 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.

**columniation**  
The use or arrangement of columns in a structure.

**distyle**  
Having two columns on one or each front.

**tristyle**  
Having three columns on one or each front.

**tetrastyle**  
Having four columns on one or each front.

**pentastyle**  
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.

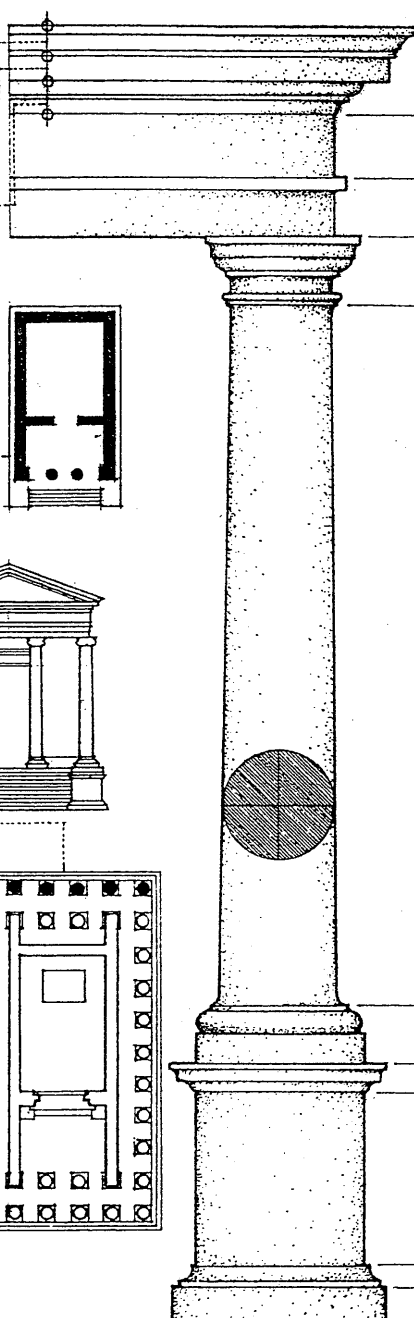
**octastyle**  
Having eight columns on one or either front.

**enneastyle**  
Having nine columns on one or on each front. Also, enneastylar.

**decastyle**  
Having 10 columns on one or on each front.

**dodecastyle**  
Having 12 columns on one or either front. Also, dodecastylar, duodecastyle.

**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.



**cornice**  
The uppermost member of a classical entablature, consisting typically of a cymatium, corona, and bed molding.

**frieze**  
The horizontal part of a classical entablature between the cornice and architrave, often decorated with sculpture in low relief.

**architrave**  
The lowermost division of a classical entablature, resting directly on the column capitals and supporting the frieze.

**capital**  
The distinctively treated upper end of a column, pillar, or pier, crowning the shaft and taking the weight of the entablature or architrave.

**shaft**  
The central part of a column or pier between the capital and the base.

**base**  
The lowermost portion of a wall, column, pier, or other structure, usually distinctively treated and considered as an architectural unit.

**cornice or cap**  
**dado**  
The part of a pedestal between the base and the cornice or cap. Also called die.

**base molding**  
**plinth**  
The usually square slab beneath the base of a column, pier, or pedestal.

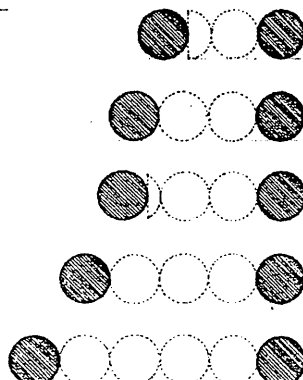
Any of five styles of classical architecture characterized by the type and arrangement of columns and entablatures employed, as the Doric, Ionic, Corinthian, Tuscan, and Composite orders.

**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.

of acs bcd bbp



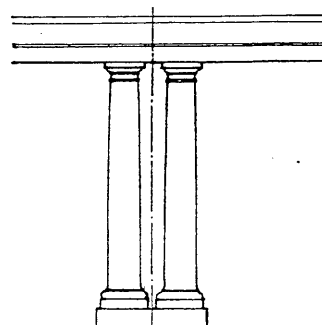
**pycnostyle**  
Having an intercolumniation of  $1/2$  diameters.

**systyle**  
Having an intercolumniation of two diameters.

**eustyle**  
Having an intercolumniation of  $2\frac{1}{4}$  diameters.

**diastyle**  
Having an intercolumniation of three diameters.

**araeostyle**  
Having an intercolumniation of four diameters. Also, areostyle.



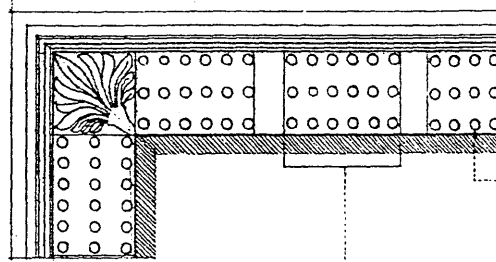
**accouplement**  
The placement of two columns or pilasters very close together.

preda  
 $\frac{1}{2}$  2  $\frac{2}{3}$  4

## 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 cornice, the corona of which has mutules on its soffit. 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 bandlike necking, an echinus, and a molded abacus.



**soffit**  
The underside of an architectural element, as an arch, beam, cornice, or staircase.

**gutta**  
One of a series of small, droplike 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 cornice, corresponding to the modillion of other orders.

### 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 hemiglyphs 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, tenia.

### regula

A fillet beneath the taenia in a Doric entablature, corresponding to a triglyph above and from which guttae are suspended. Also called guttae 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

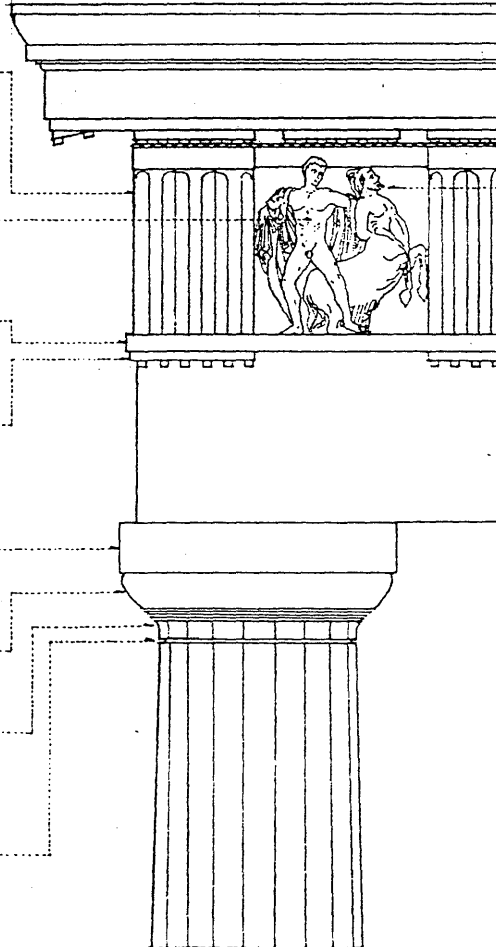
An encircling band, molding, or fillet, on a capital or shaft of a column.

### 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.



### zoophorus

A frieze bearing carved figures of people or animals. Also, zoophorus.

### trachelium

That part of the necking between the hypotrachelium and the capital of a classical column.

### hypotrachelium

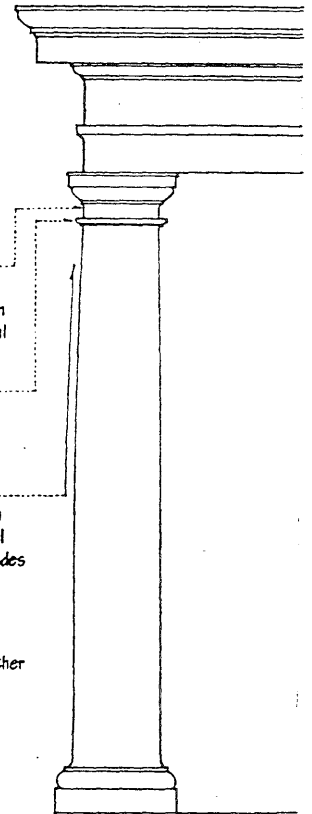
Any member between the capital and the shaft of a classical column.

### 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.

## egg 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 coronas of Ionic, Corinthian, and Composite cornices.

## 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.

## cathetus

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 cushion 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 left between adjoining flutes.

## apophyge

A small, concave curve joining the shaft 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 corona of a Corinthian, Composite, or Roman Ionic cornice.

## helix

A spiral ornament, as any of the volutes issuing from a cauliculus in a Corinthian capital.

## cauliculus

Any of the ornamental stalks rising between the acanthus leaves of a Corinthian capital, from which the volutes spring. Also called *caulcole*.

## bell

The underlying part of a foliated capital, between the abacus and neck molding.

## acanthus

An ornament, as on the Corinthian capital, patterned after the large, toothed leaves of a Mediterranean plant of the same name.

## Composite order

One of the five classical orders, popular esp. since the beginning of the Renaissance but invented by the ancient Romans, in which the Corinthian order is modified by superimposing four diagonally set Ionic volutes on a bell of Corinthian acanthus leaves.

## Corinthian order

The most ornate of the five classical orders, developed by the Greeks in the 4th century B.C. but used more extensively in 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.

### pictograph

A pictorial sign or symbol.

### graffito

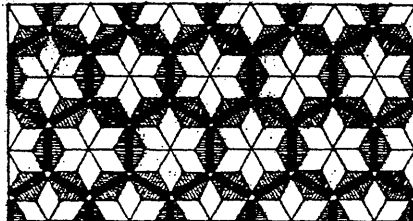
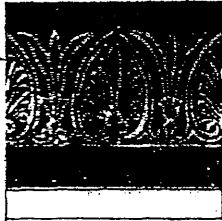
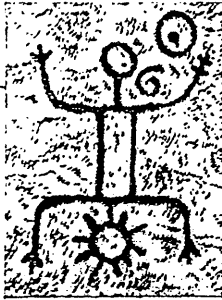
An ancient drawing or writing scratched on stone, plaster, or other hard surface.

### graffiti

Inscriptions or drawings spray-painted or sketched on a public surface, as a sidewalk or wall of a building.

### sgraffito

Decoration produced by cutting or scratching through a surface layer of paint or plaster to reveal a ground of contrasting color.



### mosaic

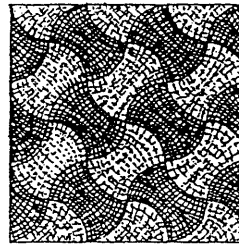
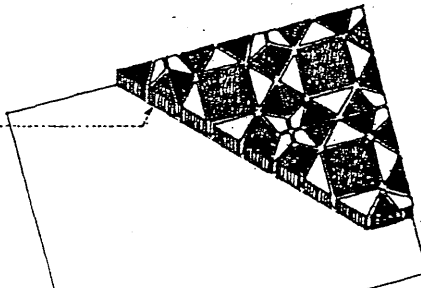
A picture or decorative pattern made by inlaying small, usually colored pieces of tile, enamel, or glass in mortar.

### tessera

One of the small pieces of colored marble, glass, or tile used in mosaic work.

### smalto

Colored glass or enamel, esp. in the form of minute squares, used in mosaic work.



### opus sectile

Any mosaic of regularly cut material.

### opus Alexandrinum

A form of opus sectile having a geometric pattern formed with few colors, as black and white, or dark green and red.

### opus vermiculatum

A mosaic of tessera arranged in waving lines resembling the form or tracks of a worm.

### Florentine mosaic

A mosaic made by inlaying fine, delicately colored stones into a white or black marble surface.

### relief

The projection of a figure or form from the flat background on which it is formed.

### cavo-relievo

Sculptural relief in which the highest points of the modeled forms are below or level with the original surface. Also called sunk relief.

### alto-relievo

Sculptural relief in which the modeled forms project from the background by at least half their depth. Also called high relief.

### mezzo-relievo

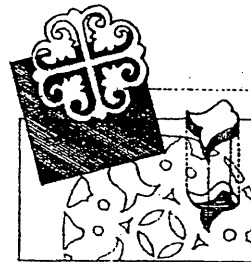
Sculptural relief intermediate between high relief and bas-relief. Also called demirelief, half relief.

### bas-relief

Sculptural relief that projects very slightly from the background. Also called basso-relievo, low relief.

### anaglyph

An ornament carved or embossed in low relief.



### appliqué

A decoration or ornament made by cutting out a design and fastening it to a larger piece of material.

### inlay

To decorate by setting pieces of wood, ivory, or the like into a surface, usually at the same level.

### emboss

To raise, mold, or carve a surface design in relief.

### engrave

To carve, cut, or etch designs on a hard surface, as of metal, stone, or the end grain of wood.

### intaglio

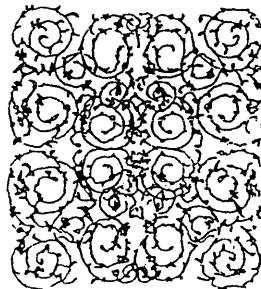
A figure or design incised into the surface of a stone or metal plate so that an impression yields a figure in relief.

### openwork

Ornamental or structural work having a latticelike nature or showing openings through its substance.

### filigree

Ornamental openwork of delicate or intricate design. Also, filagree.





## pastiche

An artistic composition consisting of forms or motifs borrowed from different sources.

## postiche

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, Mogen 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.



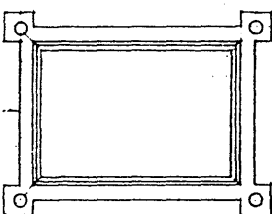
## Chi-Rho

A Christian monogram and symbol formed by superimposing the first two letters of the Greek word for Christ. Also called chrismon.



## table

A raised or sunken rectangular panel on a wall, distinctively treated or ornamented with inscriptions, painting, or sculpture.

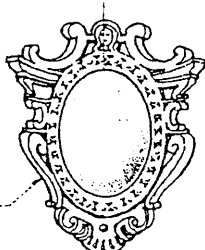


## tablet

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.

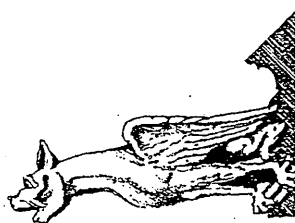


## cartouche

An oval or oblong, slightly convex surface, usually surrounded with ornamental scrollwork, for receiving a painted or low-relief decoration. Also, cartouch.

## 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 gargoyle.



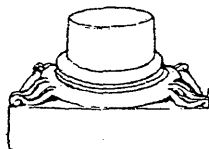
## mask

An often grotesque representation of a head or face, used as an architectural ornament. Also called mascarón.



## griffin

A mythological animal typically having the head and wings of an eagle and the body and tail of a lion. Also, griffon, gryphon.



## griffe

An ornament projecting from the round base of a column toward a corner of a square or polygonal plinth. Also called spur.

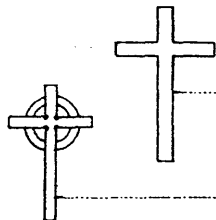


## ballflower

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.

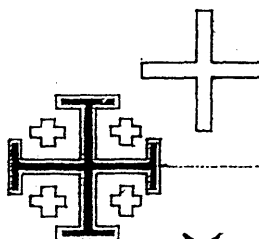


## Latin cross

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 formée 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.

## checker

To mark or decorate with a squared pattern.

## reticulate

Resembling 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 dentils, and often carved to resemble one.

## Venetian dentil

Any of a series of small rectangular blocks alternating with sloping surfaces on an archivolt or molding.

## scroll

An ornament having a spiral or convoluted form resembling a partly or loosely rolled parchment.

## Vitruvian scroll

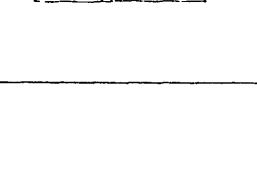
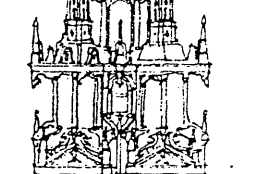
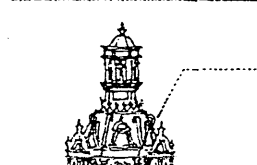
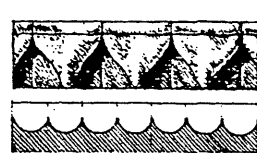
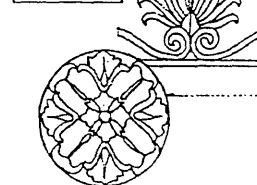
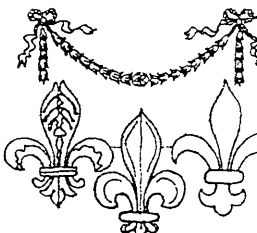
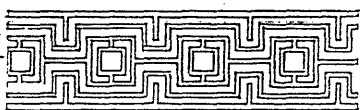
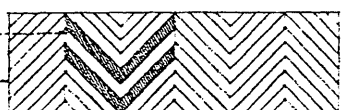
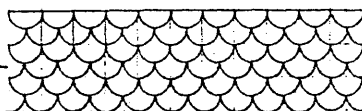
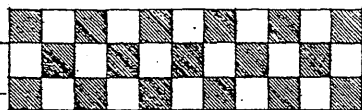
A series of scrolls forming a stylized wave pattern. Also called Vitruvian wave, wave scroll.

## banderole

A sculptured band resembling a long ribbon or scroll, adapted to receive an inscription. Also, banderol, bandrole.

## strapwork

Ornamentation composed of folded, crossed, and interlaced bands, sometimes cut with foliations.



## foliated

Ornamented with foils or representations of foliage. Also, foliate.

## wreath

A decorative band or garland of flowers, foliage, or other ornamental material.

## festoon

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 iris flower tied by an encircling band, used as the heraldic bearing of the royal family of France. Also, fleur-de-lys.

## 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.

## purfle

To decorate a shrine or tabernacle with miniature architectural forms so as to produce a lay effect.

## arris

A sharp edge or ridge formed by two surfaces meeting at an exterior angle. Also called *piend*.

## bullnose

A rounded or obtuse exterior angle. Also, bull's-nose.

## splay

A surface that makes an oblique angle with another.

## fillet

A narrow flat molding or area, raised or sunk to separate larger moldings or areas. Also called *list*.

## billet

Any of a series of closely spaced cylindrical forms ornamenting a hollow molding or cornice.

## 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, *congee*.

## ogee

A molding having a profile of a double curve in the shape of an elongated S. Also called *gula*.

## 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 reversa

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 ogees symmetrically disposed about an arris or fillet. Also called *keel*.

## 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.

## molding

Any of various long, narrow, ornamental surfaces with uniform cross sections and 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*, *moulding*.

## 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.

## bollet

A convex, rounded molding. Also, *boutel*, *bowtel*.

## gadroon

A convex molding elaborately carved with reeding or indented with notches. Also, *godroon*.

## Aaron's rod

A convex molding having pointed leaves or scrollwork emerging at regular intervals.

## cabie molding

A convex molding having the form of a rope.

## bead

A small convex molding usually having a continuous cylindrical surface.

## astragal

A small convex molding usually semicircular in section.

## baguette

A small convex molding of semicircular section, smaller than an astragal. Also, *baguet*.

## 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*, *Paternoster*.

## reeding

A parallel set of small convex moldings for ornamenting a plane or curved surface.

# ORNAMENT

## 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.

## picture mold

A horizontal molding near a ceiling from which pictures can be suspended. Also called picture rail.

## plate rail

A rail or narrow shelf fixed along a wall and grooved 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 mopboard, skirt.

## shoe

A small molding, as a quarter round, covering the joint between a baseboard and the floor. Also called base shoe.

## broken pediment

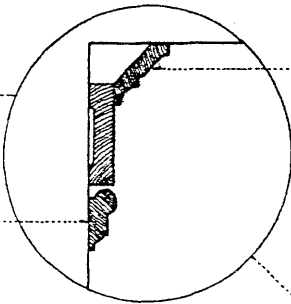
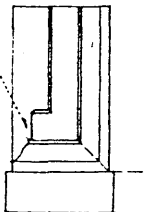
A pediment having its raking cornices interrupted at the crown or apex, the gap often being filled with an urn, a cartouche, or other ornament.

## architrave

A molded or decorative band framing a rectangular door or window opening.

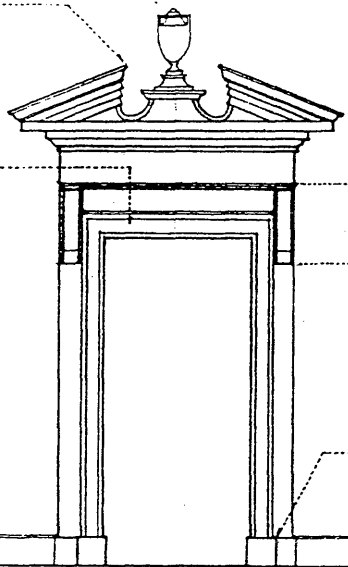
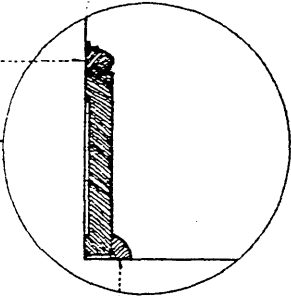
## return

The continuation of a molding, projection, or other part at an angle, usually 90°, to the main part.



## crown molding

Any ornamental molding terminating the top of a structure or decorative feature.



## tabernacle frame

A frame around a doorway or niche, having two columns or pilasters on a base supporting a pediment.

## ancon

A bracket or console used in classical architecture to support a cornice or the entablature over a doorway or window.

## console

An ornamental bracket, usually formed with scrolls and higher than its projection.

## stop

A feature terminating a molding or chamfer.

## plinth block

A plinth for stopping the architrave of a door or window above the floor.

## plinth

A flat, plain member at the bottom of an architrave, dado, or baseboard.

## plant

To attach or fasten a molding to a surface.

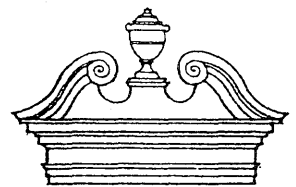
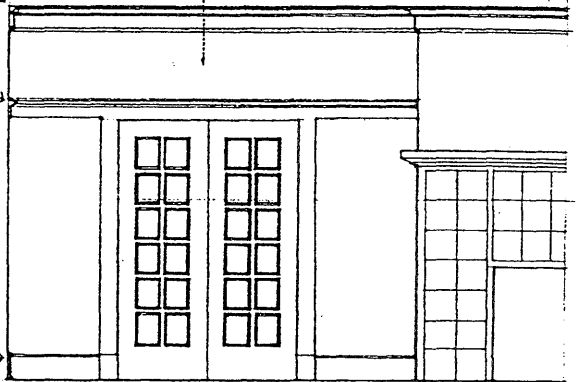
## kerfing

Making a series of parallel saw cuts partway through the thickness of a piece of wood to enable the piece to bend toward the kerfed side.



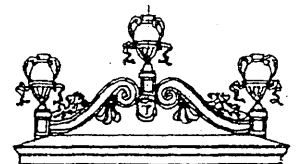
## frieze

A decorative band, as one along the top of an interior wall, immediately below the cornice, or a sculptured one in a stringcourse on an outside wall.



## swan's neck pediment

A broken pediment having an outline formed by a pair of S-curves tangent to the horizontal cornice at the ends of the pediment and rising to a pair of scrolls on either side of the center, where a finial often rises between the scrolls.



## coronet

A pedimental ornament wrought in relief over a window or door.

**gloss**

The degree of surface luster of a dried paint film, ranging in decreasing order of gloss from high gloss, semigloss, eggshell, to flat.

**high gloss**

Having a brilliant sheen or luster.

**enamel**

Any paint or varnish drying to a very smooth, hard, usually glossy finish.

**semigloss**

Having a moderate, satiny luster, producing a finish midway between high gloss and eggshell. Also called satin finish.

**eggshell**

Having little or no gloss, producing a finish midway between semigloss and flat.

**flat**

Without gloss or sheen.

**colorfast**

Having color that will not fade or run with washing, age, or exposure to light, esp. sunlight.

**actinic ray**

A ray of light, as ultraviolet, that produces photochemical effects, as the yellowing, chalking, and disintegration of paint coatings.

**photochemical**

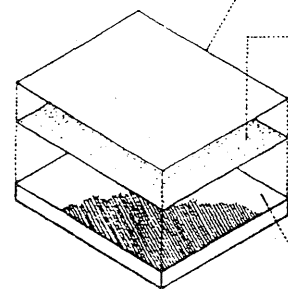
Of or pertaining to the chemical action of radiant energy, esp. light.

**coverage**

A measure of the area over which a gallon of paint may be spread at a given thickness, usually expressed in square feet per gallon.

**hiding power**

The ability of a paint film to conceal any marks, pattern, or color on the surface to which it is applied. Also called covering power.

**anticorrosive paint**

A paint or primer specially formulated with rust-inhibiting pigments to prevent or reduce the corrosion of metal surfaces. Also called rust-inhibiting paint.

**fire-retardant paint**

A paint specially formulated with silicone, polyvinyl chloride, or other substance to reduce the flame-spread of a combustible material.

**heat-resistant paint**

A paint specially formulated with silicone resins to withstand high temperatures.

**binder**

The nonvolatile part of a paint vehicle that bonds particles of pigment into a cohesive film during the drying process.

**solvent**

The volatile part of a paint vehicle that evaporates during the drying process.

**thinner**

A volatile liquid used to dilute paint or varnish to the desired or proper consistency for ease in application.

**mineral spirits**

A volatile distillation of petroleum, used as a solvent and thinner for paints and varnishes.

**turpentine**

A colorless, volatile oil obtained by distilling oleoresin from various conifers and used as a thinner and solvent for paints and varnishes. Also called oil of turpentine, spirits of turpentine.

**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.

**pigment**

A finely ground, insoluble substance suspended in a liquid vehicle to impart color and opacity to a paint.

**vehicle**

A liquid in which pigment is dispersed before being applied to a surface, to control consistency, adhesion, gloss, and durability.

A mixture of a solid pigment suspended in a liquid vehicle, applied as a thin, usually opaque coating to a surface for protection and decoration.

**drying oil**

Any of various oil, organic liquids, as linseed oil, that oxidizes and hardens to form a tough elastic film when exposed in a thin layer to air.

**alkyd resin**

Any of a group of synthetic resins derived from a polyvalent alcohol in reaction with an organic acid, used chiefly in adhesives and paints.

**latex**

A water emulsion of synthetic rubber or plastic globules obtained by polymerization and used in paints and adhesives.

**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.

**copal**

A hard, lustrous resin obtained from various tropical trees, used chiefly in making varnishes.

**spar varnish**

A durable, weather-resistant varnish made from durable resins and linseed or tung oil. Also called marine varnish.

**polyurethane 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.

**Chinese lacquer**

A natural varnish obtained from an Asian sumac, used to produce a highly polished, lustrous surface on wood. Also called Japanese lacquer.

**lacquer**

Any of various clear or colored synthetic coatings consisting of nitrocellulose or other cellulose derivative dissolved in a solvent that dries by evaporation to form a high-gloss film.

**oil paint**

A paint in which the vehicle is a drying oil.

**alkyd paint**

A paint in which the vehicle is an alkyd resin.

**epoxy paint**

A paint having an epoxy resin as a binder for increased resistance to abrasion, corrosion, and chemicals.

**latex paint**

A paint having a latex binder that coalesces as water evaporates from the emulsion. Also called rubber-base paint, water-base paint.

**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.

**varnish**

A liquid preparation consisting of a resin dissolved in an oil (oil varnish) or in alcohol (spirit varnish), that when spread and allowed to dry forms a hard, lustrous, usually transparent coating.

**shellac**

A spirit varnish made by dissolving purified lac flakes in denatured alcohol. Also called shellac varnish.

## 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.

### **gypsum**

A soft mineral, hydrated calcium sulfate, used as a retarder in portland cement and in 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.

### **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.

### **finish coat**

The final coat of plaster, serving either as a finished surface or as a base for decoration.

### **skim 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 lath or masonry. Also called floating 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.

### **gauged plaster**

A finish coat in plastering, consisting of lime putty to which gauging 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 gauging plaster, troweled to a smooth, dense finish.

### **lime putty**

Quicklime 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 gauging plaster, troweled 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 thin-coat plaster.

### **acoustical plaster**

A low-density plaster containing vermiculite or other porous material to enhance its ability to absorb sound.

### **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 mill-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**

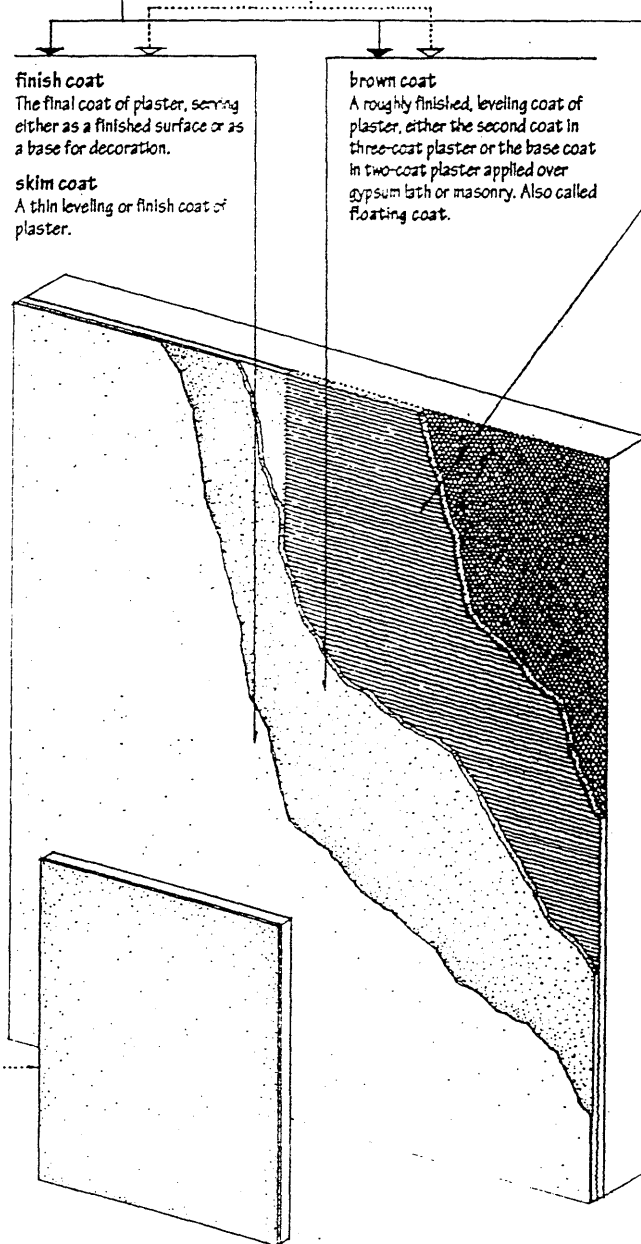
A gypsum basecoat plaster containing perlite as an aggregate to reduce its weight and increase its thermal and fire resistance.

### **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**

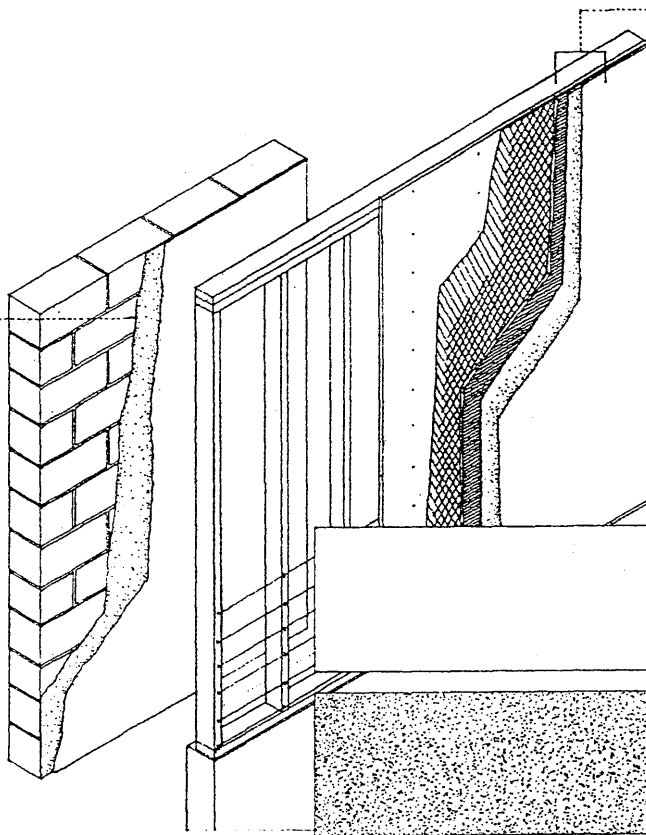
Plaster that is formulated and dry-mixed by the manufacturer, requiring only the addition of water at the job site.



**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.



## stucco

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.

## albarium

A stucco used in ancient times, made from powdered marble and lime mortar and often polished.

## intonaco

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.

## combed finish

A stucco finish produced by dragging a serrated tool across the stucco surface before it sets. Also called dragged finish.

## dash-troweled finish

A stucco finish produced by troweling the high spots of a dashed stucco surface before it sets.

## stipple-troweled finish

A stucco finish produced by troweling the high spots of a stippled stucco surface before it sets.

## daubing

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.

## molding plaster

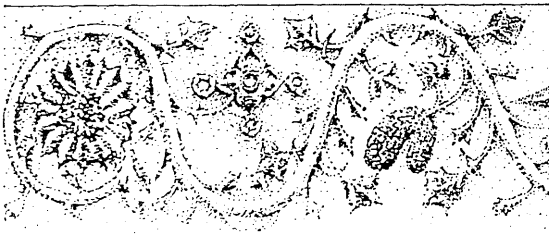
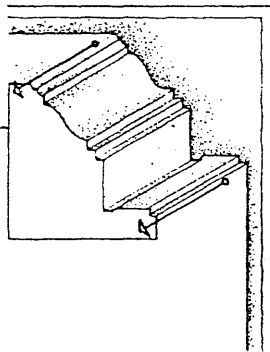
A plaster used in ornamental work, consisting of finely ground gypsum and hydrated lime.

## running mold

A sheet-metal template cut to the desired profile, backed with wood, and pushed along between temporary grounds or rules to form a plaster molding along the angle between a wall and ceiling. Also called horsed mold.

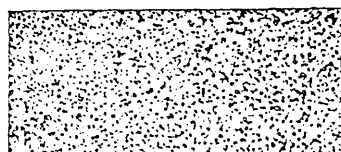
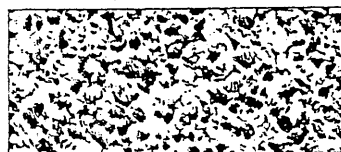
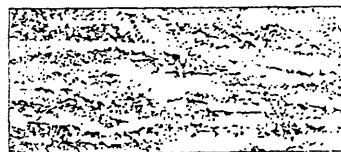
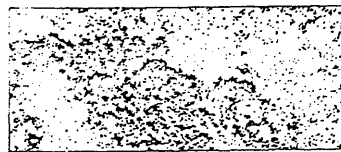
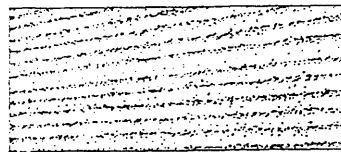
## horse

The wooden support for the sheet-metal template of a running mold.



## parquetry

Fine ornamental plasterwork, esp. exterior plasterwork bearing designs in low relief. Also, parget.



# PLASTER

## lath

Any of a number of suitable surfaces for receiving plasterwork, as gypsum lath, metal lath, wood lath, masonry, or brickwork.

## wood lath

A thin, narrow strip of wood used with other strips to form latticework, a backing for plaster or stucco, or a support for slates or other roofing material.

## furring

The attaching of wood strips or metal channels to a wall or other surface, as to provide an even base for lath or a finish material, or to provide an air space between a wall and a finish material.

## metal lath

A plaster base fabricated of expanded metal or of wire fabric, painted or galvanized for corrosion resistance.

## expanded-metal lath

Metal lath fabricated by slitting 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 lath that is dimpled 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 gypsum lath or junctures 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 finish coat of plaster by the basecoat or gypsum lath, 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 preformed metal screed for separating a plastered surface from another material along the base of a wall.

## vented screed

A perforated metal screed for venting a concealed space behind a plastered surface.

## expansion screed

A preformed metal screed applied over joints in gypsum lath to control cracking.

## control joint

A preformed metal strip installed to relieve shrinkage, temperature, or structural stresses within a large plastered or stuccoed area.

## corner bead

A preformed 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 angle bead.

## 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 preformed 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.



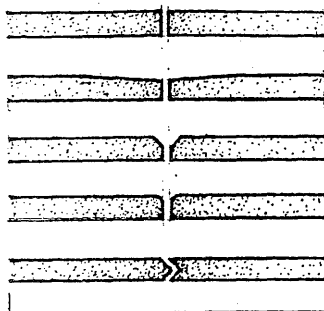
square edge

tapered edge

beveled edge

rounded edge

tongue & groove



wallboard

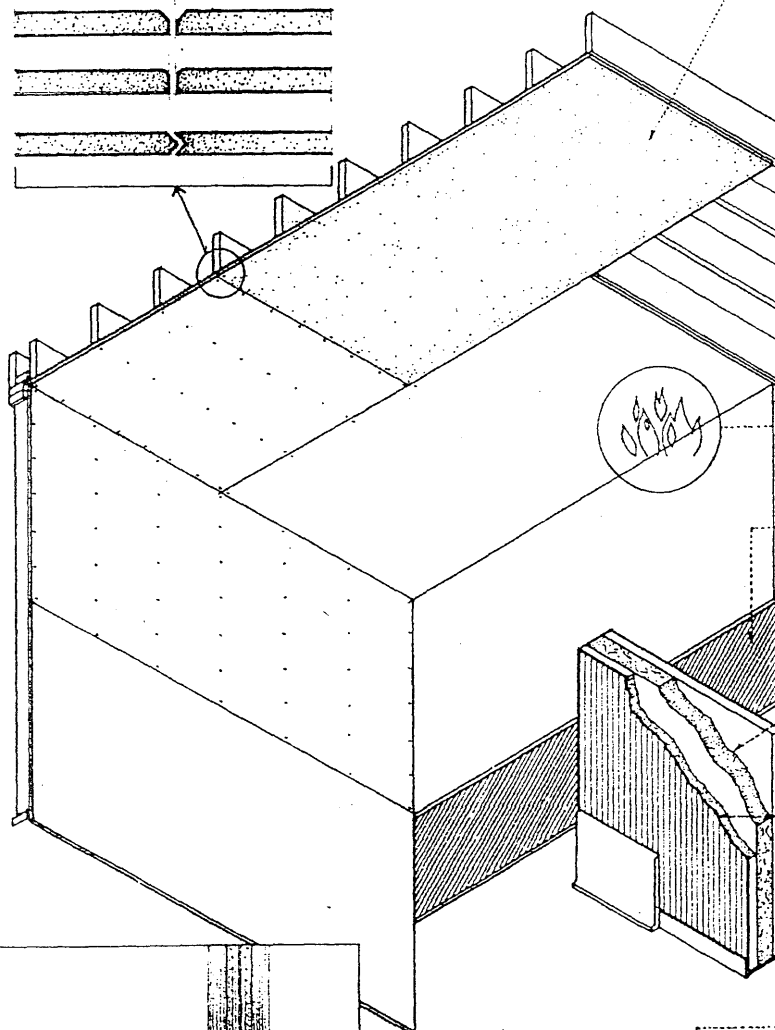
Any of various sheet materials used in covering a wall or ceiling as a substitute for plaster or paneling.

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-in. (25.4 mm) thick, used as a base in solid gypsum-board partitions and for lining shafts.

prefinished gypsum board

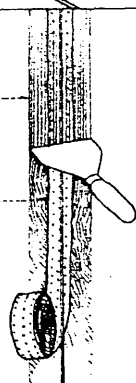
A gypsum board having a decorative vinyl or printed paper surface.

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.

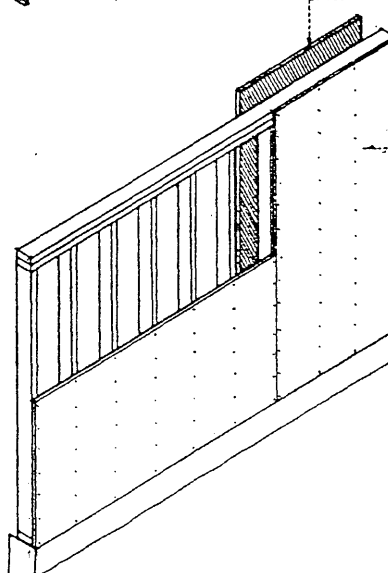


foil-backed gypsum board

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.



# 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 closing a mold on 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

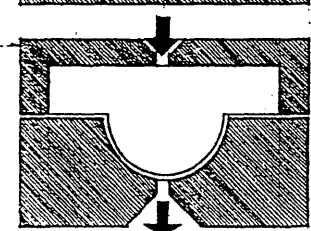
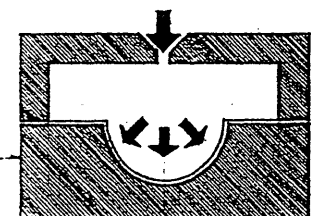
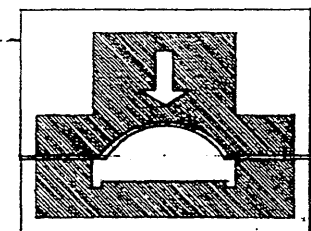
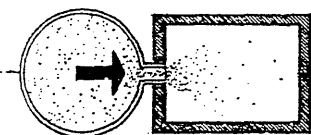
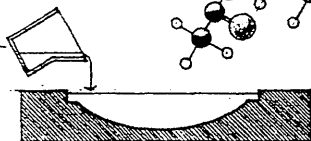
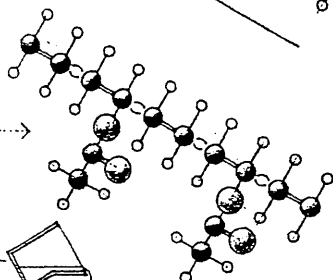
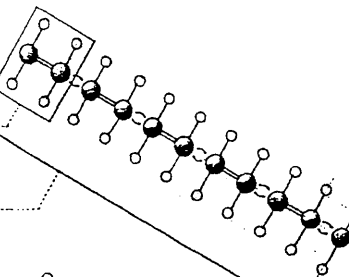
A method of shaping a thermoplastic sheet by heating and forcing it against the contours of a mold by heat and pressure.

## 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.

## filler

A relatively inert substance added to modify the bulk, strength, heat resistance, electrical resistance, or working properties of a resin.

## stabilizer

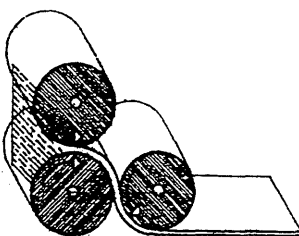
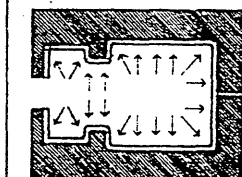
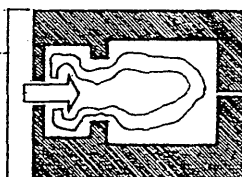
A substance added to prevent or retard the degradation of a plastic when exposed to the ultraviolet radiation or other environmental conditions.

## plasticizer

Any of various substances added to a resin to increase its workability and flexibility.

## catalyst

A substance that causes or accelerates a chemical reaction without itself undergoing a permanent change in composition.



## calendering

A method of producing plastic film or sheeting by passing the material between a series of revolving, heated rollers.

## sheeting

A thin form of plastic, having a thickness very small in proportion to its length and width.

## film

Sheeting having a nominal thickness not greater than 10 mils.

## 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 light, 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 shatterproof windows.

## polyethylene

A tough, light, and flexible thermoplastic used esp. in the form of sheeting and film for packaging, dampproofing, and as a vapor retarder. Also called polythene.

## polypropylene

A tough, thermoplastic that is resistant to heat and chemicals and used for pipe fittings, electrical insulation, and carpeting fibers.

## polystyrene

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. Abbr.: 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. Abbr.: 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**.

**polyurethane**

Any of various thermoplastic or thermosetting resins used in flexible and rigid foams, elastomers, 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 corrosion and 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.

**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 1916, and used for telephone receivers, radio cabinets, electric insulators, and molded plastic hardware.

**urea-formaldehyde resin**

Any of various thermosetting synthetic resin made by condensing urea with formaldehyde and used in appliance housings, electrical devices, adhesives, and surface coatings.

**postforming**

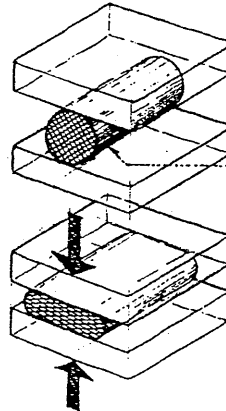
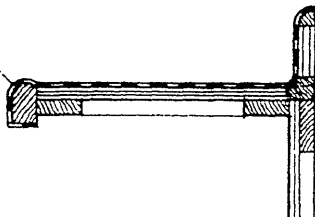
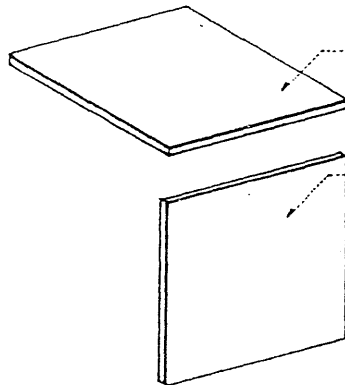
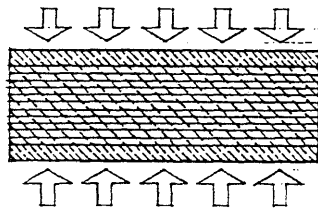
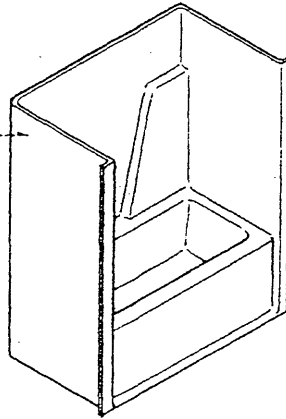
A method of shaping a fully or partially cured thermosetting laminate over a mold by heat and pressure.

**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.



**laminate**

A product made by uniting two or more layers of material by an adhesive or other means, as plywood and plastic laminate.

**plastic laminate**

A hard surfacing material consisting of superposed layers of paper impregnated with melamine and phenolic resins, fused together under heat and pressure.

**high-pressure laminate**

A plastic laminate molded and cured in the range of pressures from 1,200 to 2,000 psi (84 to 140 kg per sq. cm), used for surfacing countertops and cabinetry.

**low-pressure laminate**

A plastic laminate molded and cured with a maximum pressure of 400 psi (28 kg per sq. m), used in vertical and low-wear applications.

**Formica**

Trademark for a brand of plastic laminate.

**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 latex before vulcanization.

**vulcanization**

The treatment of rubber with sulfur and heat to impart greater elasticity, strength, 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 gaseous permeability, produced by polymerizing butylene and used in roofing membranes and waterproofing barriers.

**Butyl**

Trademark for a brand of butyl rubber.

**neoprene**

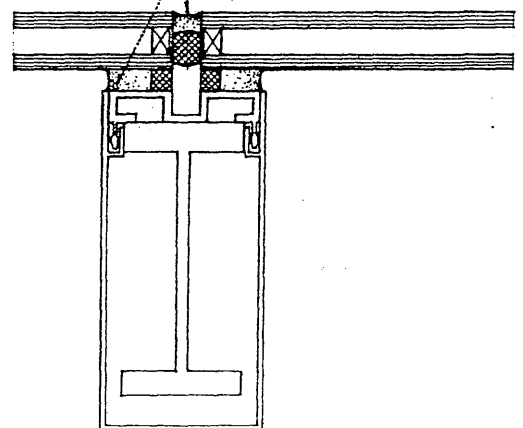
A synthetic rubber characterized by superior resistance to oils and sunlight, and used in paints, roofing membranes, flashing, gaskets, and bearings.

**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.

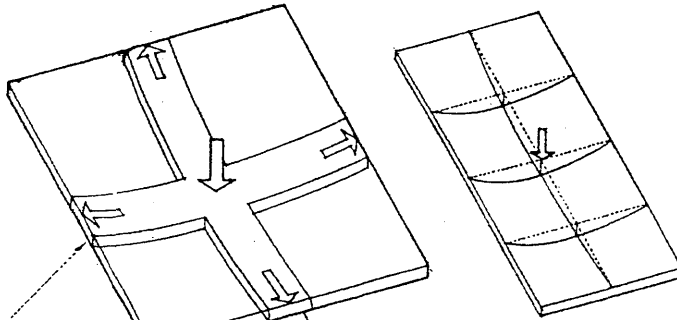
The bending of one beam strip also causes twisting of transverse strips, whose torsional resistance increases the overall stiffness of the plate. Therefore, while bending and shear transfer an applied load in the direction of the loaded beam strip, shear and twisting transfer the load at right angles to the loaded strip.

## continuous plate

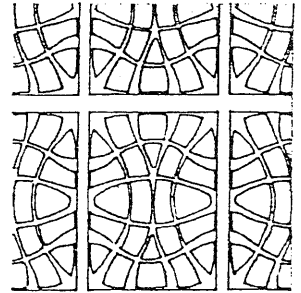
A plate extending as a structural unit over three or more supports in a given direction. A continuous plate is subject to lower bending moments than a series of discrete, simply supported plates.

## 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.

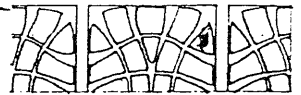


A plate should be square or nearly square to ensure that it behaves as a two-way structure. As a plate becomes more rectangular than square, the two-way action decreases and a one-way system spanning the shorter direction develops since the shorter plate strips are stiffer and carry a greater portion of the load.



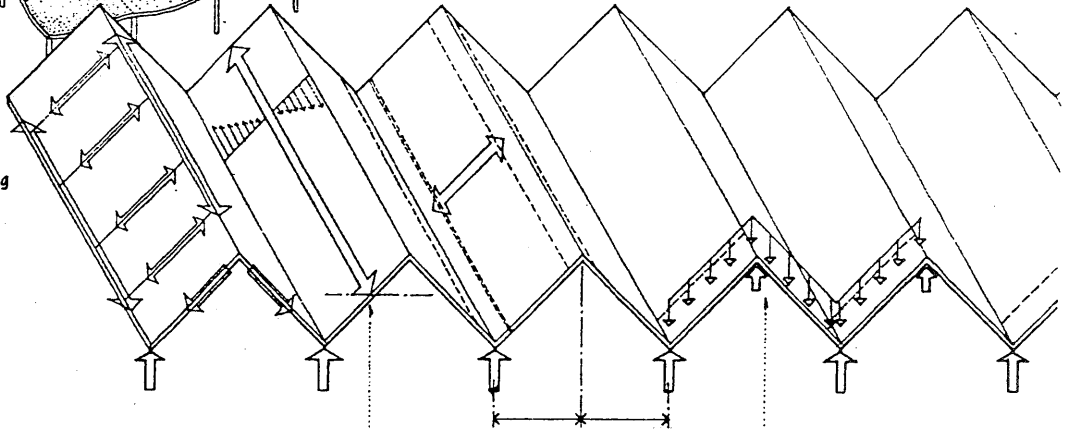
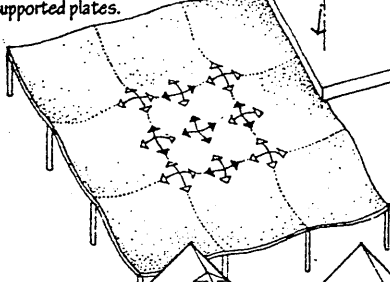
## isostatic plate

A plate reinforced by a grid of curved ribs which follow the isostatics of the structure.



## isostatics

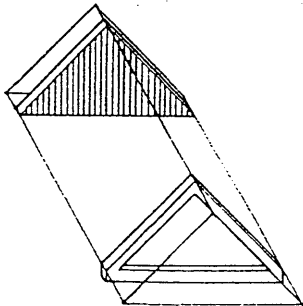
Lines of principal stress indicating the flow of bending stresses and along which torsional shear stresses are zero.



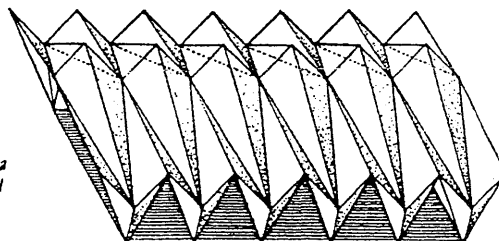
Each plane behaves as a beam in the longitudinal direction.

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.

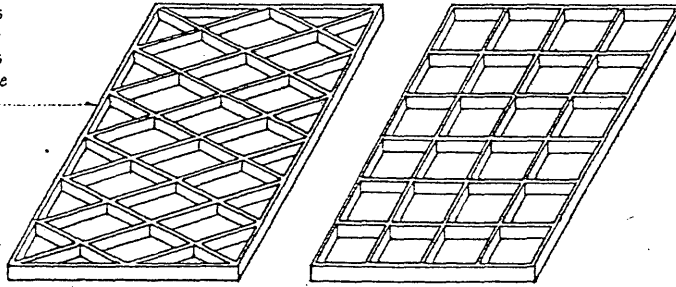


Vertical diaphragms or rigid frames stiffen a folded plate against deformation of the fold profile.



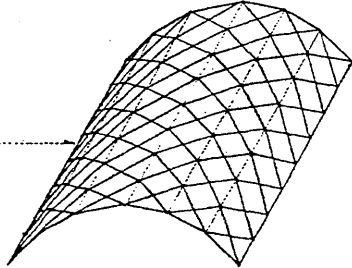
**skew grid**

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.



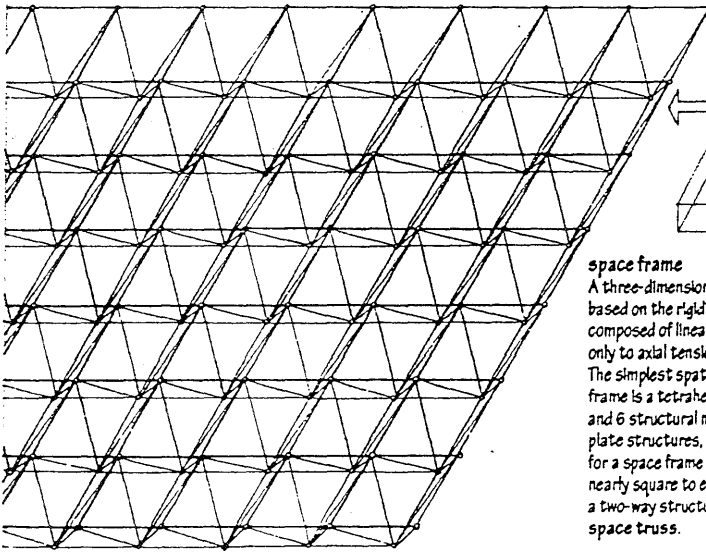
**lamella**

One of the relatively short timber, metal, or reinforced-concrete elements forming a lamella roof.

**grid structure**

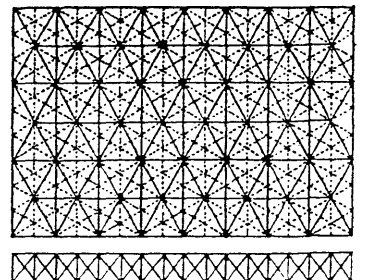
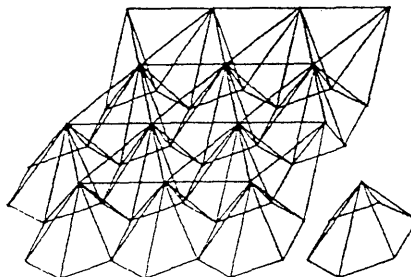
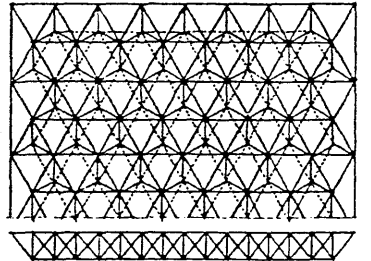
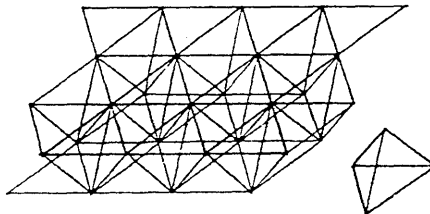
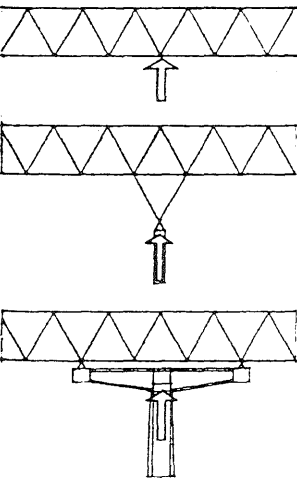
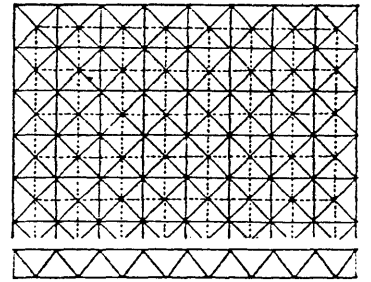
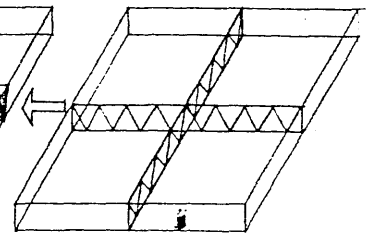
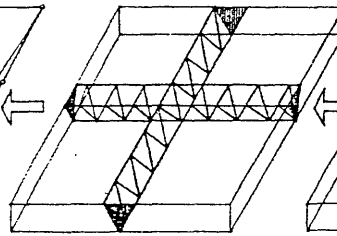
A framework of crisscrossing beams connected at their intersections by rigid joints and dispersing an applied load in two directions according to the physical properties and dimensions of the beam elements.

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  $\frac{8}{9}$  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 bay 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.

## well

A hole drilled or bored into the earth to obtain water, petroleum, or natural gas.

## aquifer

A geological formation containing or conducting groundwater, esp. one capable of providing water in usable quantities to springs or wells.

## artesian well

A well in which water rises under pressure from a permeable stratum overlaid by impermeable rock.

## 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.

## water tower

A tower into which water is pumped to a height sufficient to maintain a desired pressure for distribution to customers, or for firefighting.

## potable water

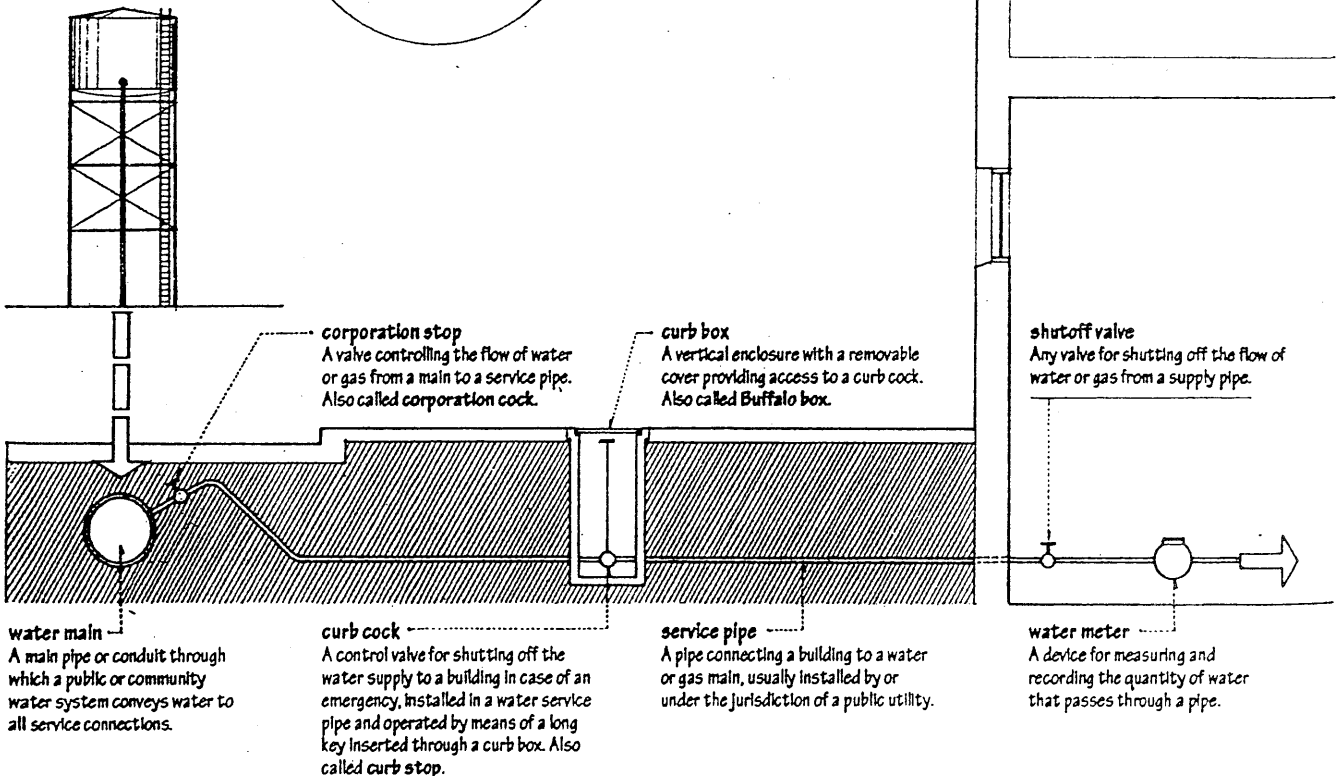
Water fit for human consumption.

## water treatment

The act or process of making water more potable or useful, as by purifying, clarifying, or softening.

## raw water

Water that requires treatment before it can be used for drinking.



## water system

A system of pipes, valves, and fixtures for distributing and using water in a building.

## 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

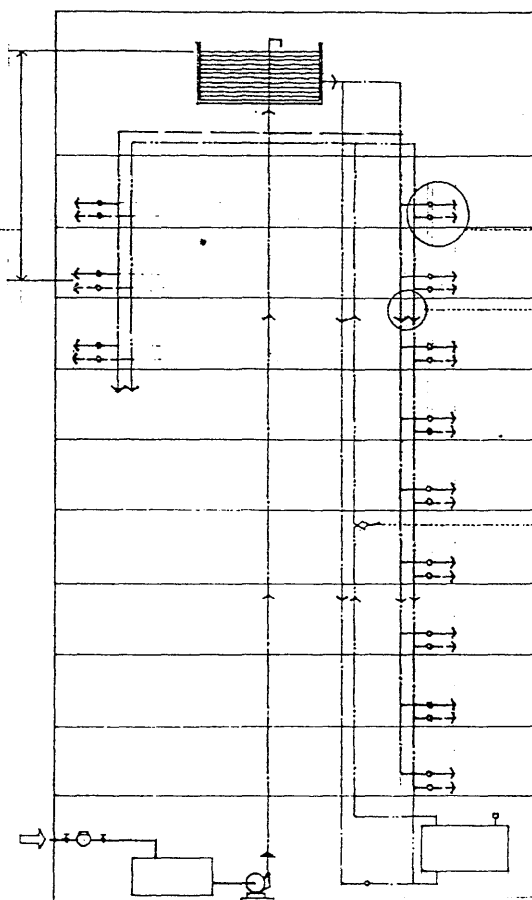
The pressure at the lower of two given points in a liquid, expressed in terms of the vertical distance between the points. Also called pressure head.

## 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.



## branch

Any member of a piping system other than a main, riser, or stack.

## riser

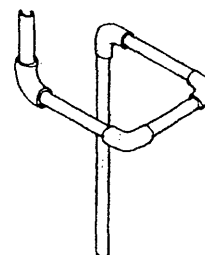
A vertical pipe, conduit, or duct in a utility system.

## main

A principal pipe, conduit, or duct in a utility system.

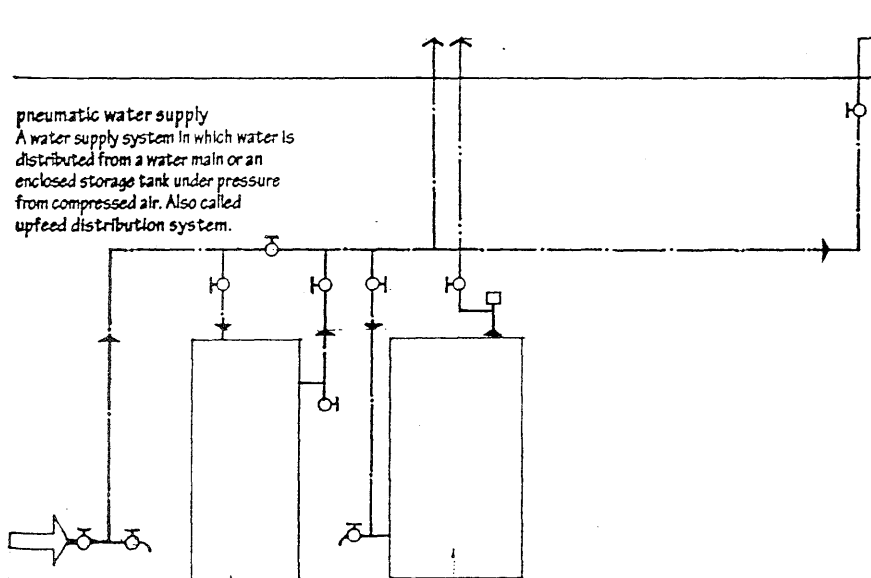
## expansion bend

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.



## 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.



## hose bibb

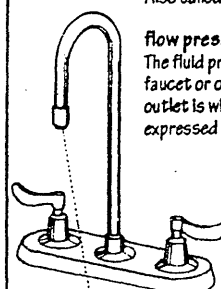
A threaded exterior faucet, as for attaching a garden hose, often attached to the side of a house at about the height of a sill. Also called hosecock, sillcock.

## 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/m<sup>2</sup>).



## mixing faucet

A faucet having a single outlet for water from separately controlled hot-water and cold-water taps. Also called mixer.

## aerator

A sieve-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.

## 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 lather with difficulty.

## water heater

An electric or gas appliance for heating water to a temperature between 120°F and 140°F (50°C and 60°C) and storing it for use.

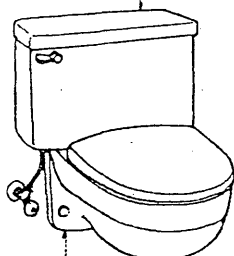
# PLUMBING

## plumbing fixture

Any of various receptacles for receiving water from a water system and discharging the liquid waste into a drainage system.

## sanitary ware

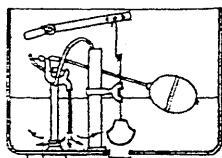
Plumbing fixtures, as sinks and toilet bowls, made of vitreous china, porcelain enamel, or enameled metal.



**wall-hung**  
Designed to be attached to or hung from a wall.

## ball cock

A device for regulating the supply of water in a flush tank by means of a hollow floating ball which by its rise or fall shuts or opens a supply valve. Also called float valve.

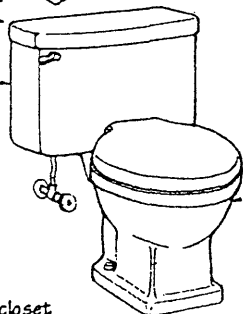


## water closet

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.

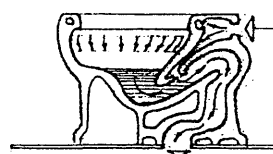
## flushometer valve

A valve that supplies a fixed quantity of water to fixtures for flushing purposes when actuated by direct water pressure.



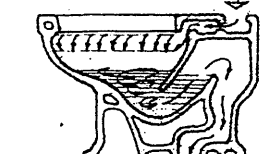
## siphon-jet

A toilet bowl in which the flushing water enters through the rim and siphonic action initiated by a water jet draws the contents of the bowl through the trapway.



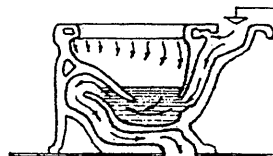
## reverse-trap

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 scours 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 basinlike 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.

## 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 tray

A deep sink for washing clothes.

## service sink

A deep sink used in janitorial work. Also called slop sink.

## water hammer

The concussion and banging noise that results when a volume of water moving in a pipe suddenly stops or loses momentum.

## air chamber

A compartment in a water system containing air that elastically compresses and expands to equalize the pressure and flow of water in the system. Also called air cushion.

## 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 used 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 flowing 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.

## backsplash

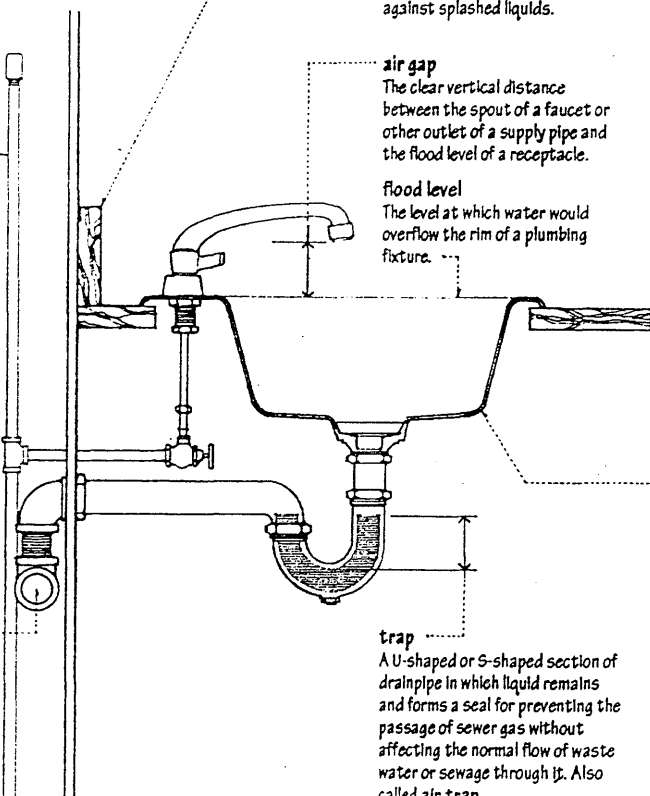
A vertical panel of waterproof material attached to the wall behind a countertop or stovetop to protect against splashed liquids.

## 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.



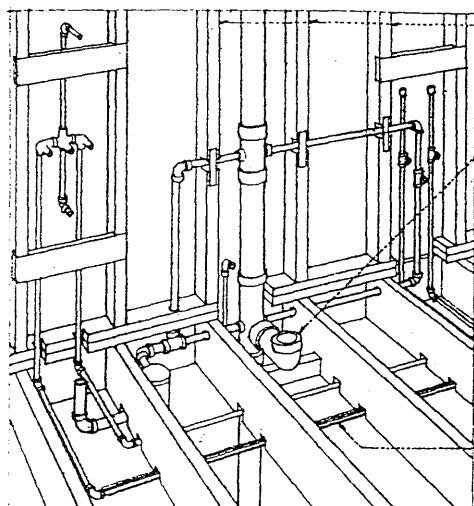
## trap

A U-shaped or S-shaped section of drainpipe in which liquid remains and forms a seal for preventing the passage of sewer gas without affecting the normal flow of waste water or sewage through it. Also called air trap.

## 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.





### 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 shutoff valve closed by lowering a wedge-shaped gate across the passage.

### angle valve

A globe valve having an outlet at a right angle to the inlet.

### alignment valve

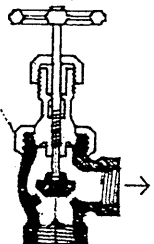
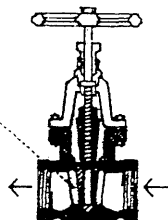
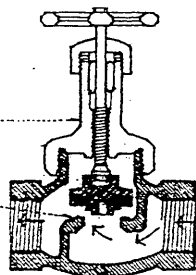
A washerless valve opened by aligning holes in a disk, cylinder, or ball.

### mixing 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.

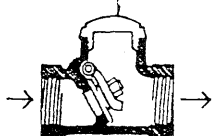


### bell-and-spigot

A pipe joint made by fitting the end (spigot) of one pipe into the enlarged end (bell) of another pipe and sealing with a caulking compound or a compressible ring.

### gasket

A rubber or metal ring inserted between two mating surfaces to make the joint watertight.



### plumbing wall

A wall or partition containing vertical space for a plumbing stack. Also called stack partition.

### closet bend

A 90° soil 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 premolded 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.

### elbow

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 in the direction of the main.

### wye

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 U-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

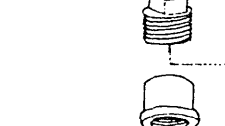
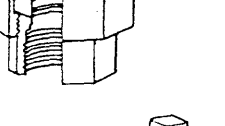
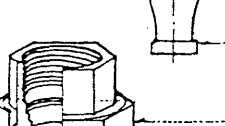
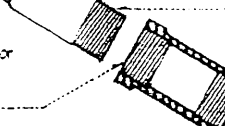
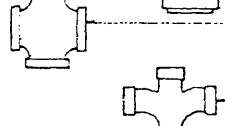
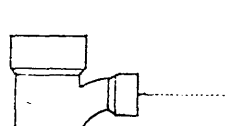
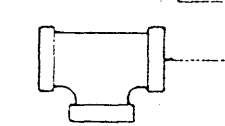
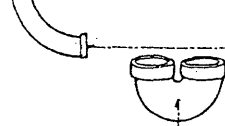
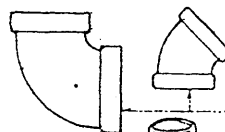
A coupling device for connecting two pipes, neither of which can be turned, consisting of two internally threaded end pieces which are tightened around the pipe ends to be joined, and an externally threaded center piece, which draws the two end pieces together as it is rotated.

### plug

An externally threaded fitting for closing the end of a pipe.

### cap

An internally threaded fitting for enclosing the end of a pipe.



## 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 8 ft. (2.4 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 oversized 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.

## invert

The lowest point on the interior of a drain pipe or sewer where the liquid is deepest.

## vent 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 vent stack or 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 private treatment facility. Also called house sewer.

## sewer

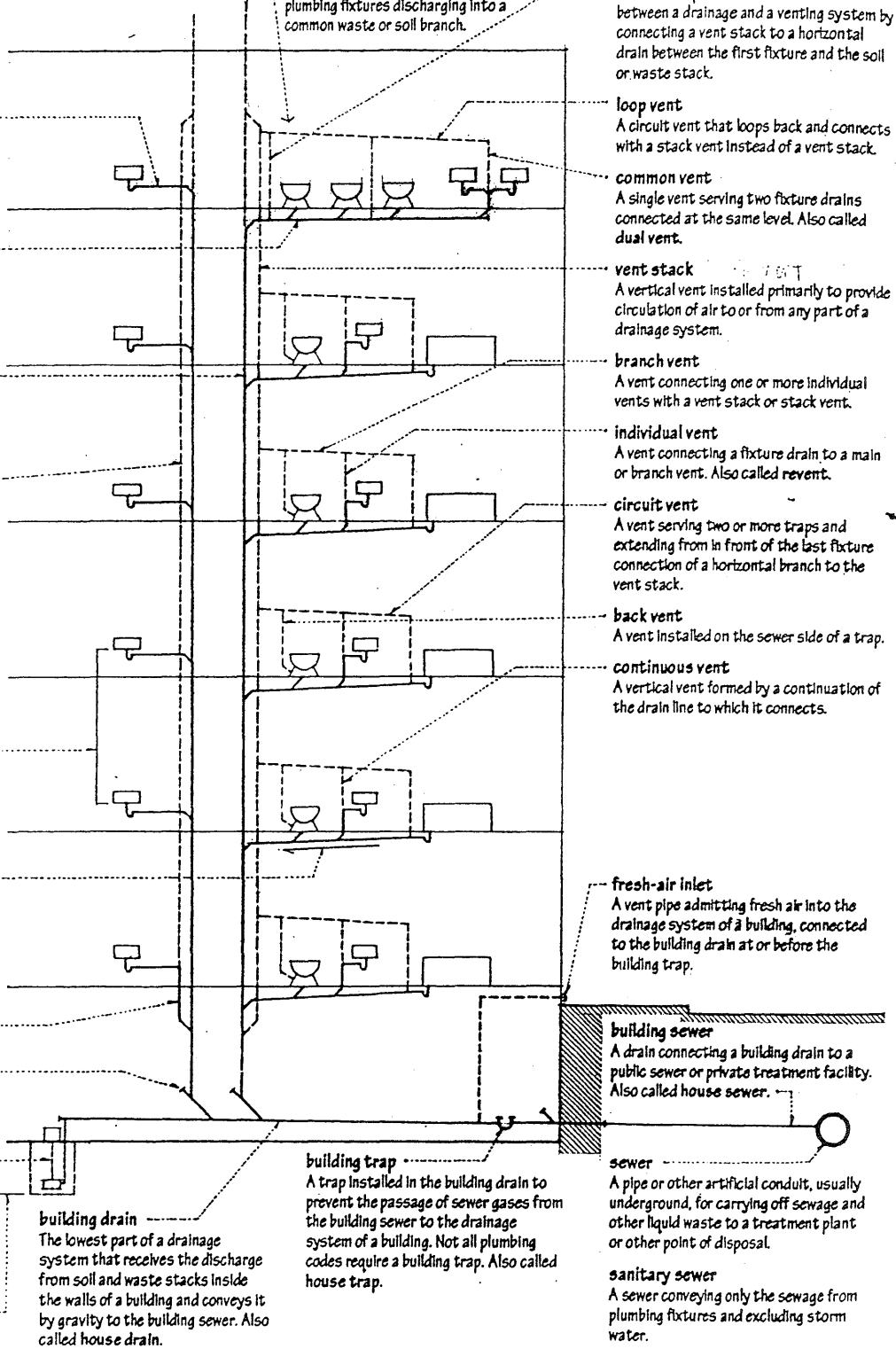
A pipe or other artificial conduit, usually underground, for carrying off sewage and other liquid waste to a treatment plant or other point of disposal.

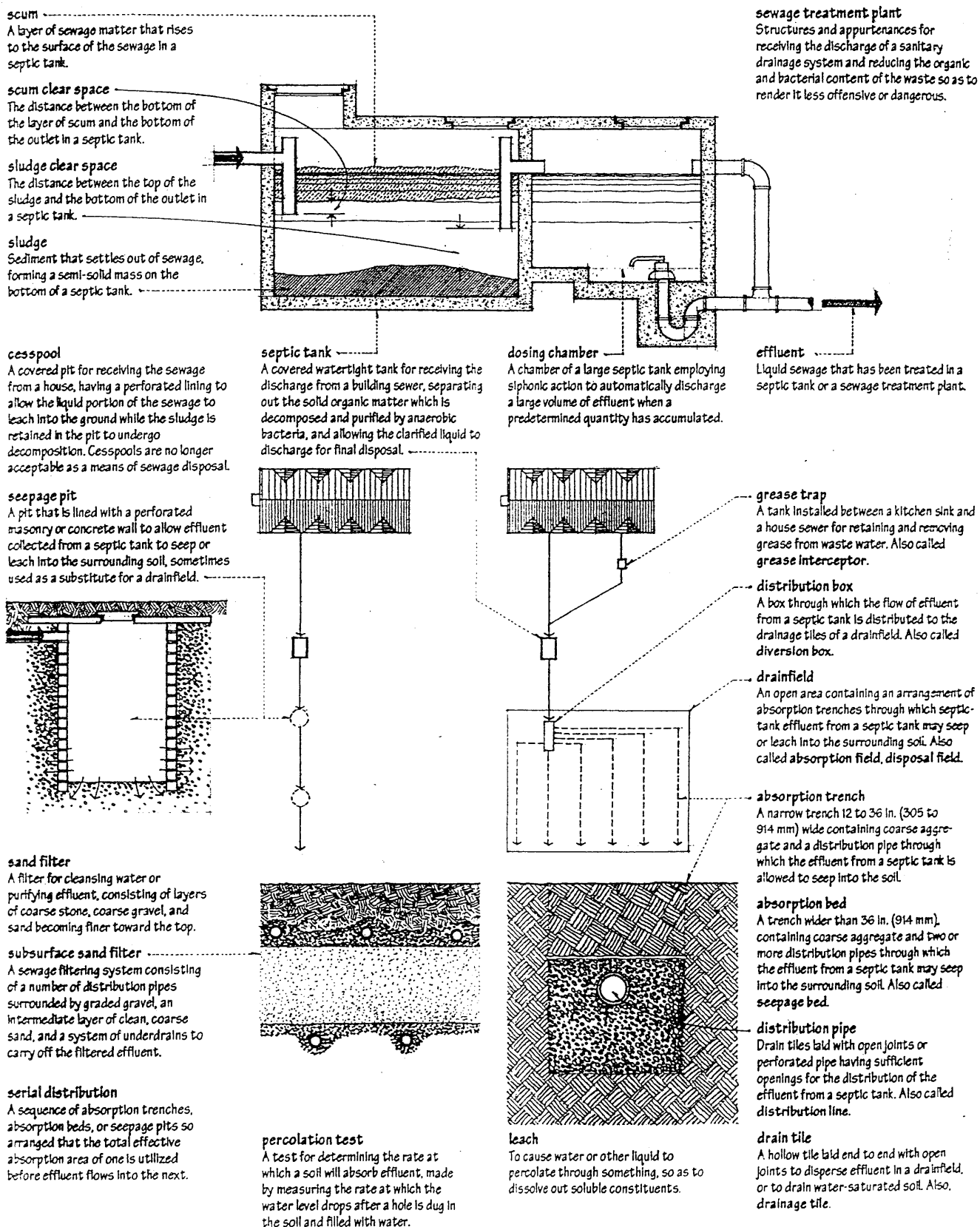
## sanitary sewer

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.





# REINFORCED CONCRETE

**Concrete in which steel reinforcement is embedded in such a manner that the two materials act together in resisting forces. Also called *béton armé*, *ferroconcrete*.**

## reinforcement

A system of steel bars, strands, or wires for absorbing tensile, shearing, and sometimes the 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 *rebar*.

## deformed bar

A reinforcing bar hot-rolled with surface deformations to develop a greater bond with concrete.

## tension reinforcement

Reinforcement designed to absorb tensile stresses.

## compression reinforcement

Reinforcement designed to absorb compressive stresses.

## plain concrete

Concrete having no reinforcement, or reinforced only for drying shrinkage or thermal stresses.

## ferrocement

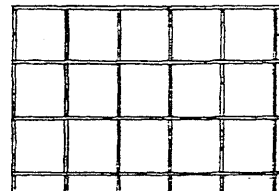
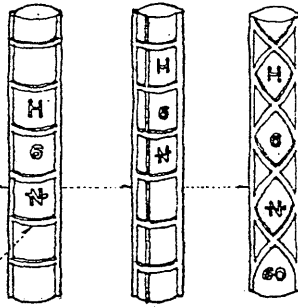
Constructed of cement-sand mortar over a wire mesh that has been preshaped over a mold.

## fiber-reinforced concrete

Concrete reinforced with dispersed, randomly oriented fibers of glass or plastic.

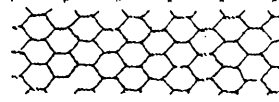
## gfrc

Abbreviation for glass-fiber-reinforced concrete.



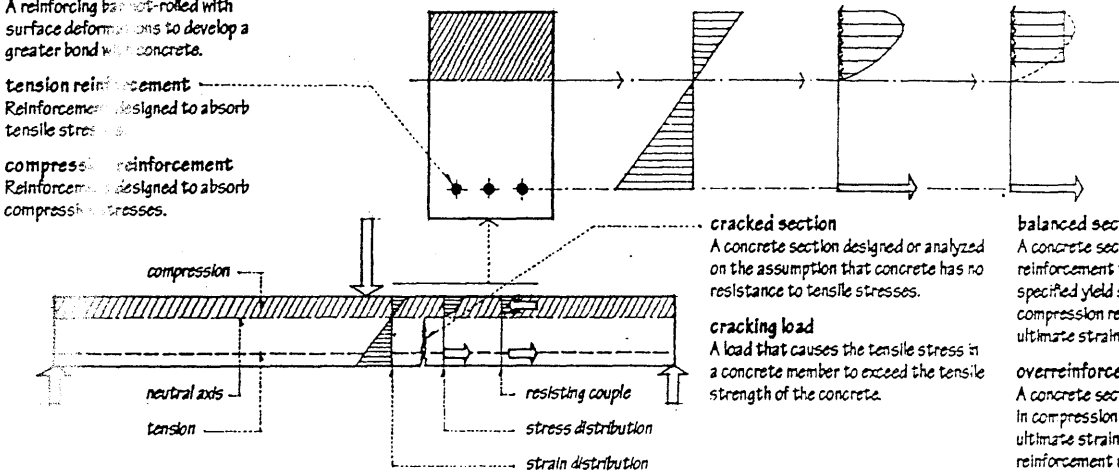
## welded-wire fabric

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 tension reinforcement.

## bar spacing

The center-to-center spacing of parallel reinforcing bars, the resulting bar distance between the bars being regulated by bar diameter, maximum size of coarse aggregate, and thickness of the concrete section.

## cover

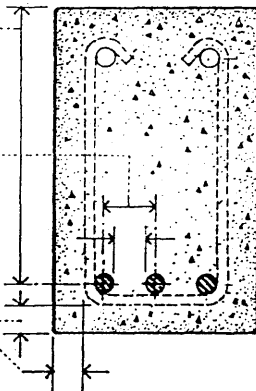
The amount of concrete required to protect steel reinforcement from fire and corrosion, measured from the surface of the reinforcement to the outer surface of the concrete section.

## bond

The adhesion between two substances, concrete and reinforcing bars.

## bond stress

The adhesive force per unit area of contact between a reinforcing bar and the surrounding concrete developed at any section of a flexural member.



## effective area of concrete

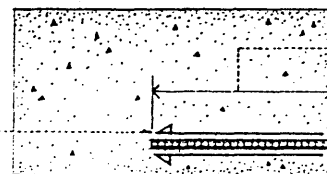
The area of a concrete section between the compression face and the centroid of the tension reinforcement.

## effective area of reinforcement

The product of the right 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.



## embedment 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°, 135°, or 180° 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.

## truss bar

A longitudinal bar bent up or down at points of moment reversal in a reinforced concrete beam.

## top bar

Any of the longitudinal bars serving as tension reinforcement in the section of a concrete beam or slab subject to a negative moment.

## 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 greater than 2.5 for continuous spans, or 4.5 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.

## web reinforcement

Reinforcement consisting of bent bars or stirrups, placed in a concrete beam to resist diagonal tension.

## bent bar

A longitudinal bar bent to an angle of 30° or more with the axis of a concrete beam, perpendicular to and intersecting the cracking that could occur from diagonal tension.

## bottom bar

Any of the longitudinal bars serving as tension reinforcement in the section of a concrete beam or slab subject to a positive moment.

## stirrup

Any of the U-shaped or closed-loop bars placed perpendicular to the longitudinal reinforcement of a concrete beam to resist the vertical component of diagonal tension.

## diagonal tension

The principle tensile stresses acting at an angle to the longitudinal axis of a beam.

## vertical reinforcement

Longitudinal reinforcement placed in a concrete column to absorb compressive stresses, resist bending stresses, and reduce the effects of creep and shrinkage in the column. The effective cross-sectional area of vertical reinforcement should not be less than 0.01 nor more than 0.08 times the gross cross-sectional area of the column, with a minimum of four #5 bars for tied columns and a minimum of six #5 bars for spiral columns.

## lap splice

A splice for transferring tensile or compressive stresses from one longitudinal bar to another, made by lapping their ends for a length specified in bar diameters.

## butt splice

A splice for transferring tensile or compressive stresses from one longitudinal bar to another, made by butting their ends together and connecting them in a positive fashion.

## welded splice

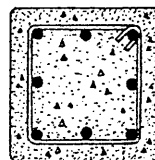
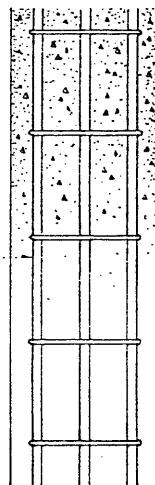
A butt splice made by arc-welding the butted ends of two reinforcing bars.

## compression splice

A butt splice made by connecting the butted ends of two reinforcing bars with a mechanical fastener, as a sleeve clamp.

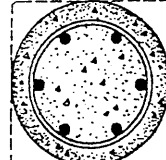
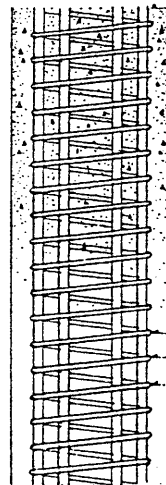
## offset bend

A bend displacing a section of longitudinal bar to a position parallel to the original bar, used esp. in the vertical reinforcement of concrete columns.



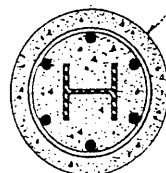
## tied column

A concrete column reinforced with vertical bars and individual lateral ties. Lateral ties should have a diameter of at least 3/8 in. (9.5 mm), spaced apart not over 48 tie diameters, 16 bar diameters, or the least dimension of the column section. Each corner and alternate longitudinal bar should be laterally supported by the bend of a tie having an included angle of not more than 135°, with no bar being more than 6 in. (152 mm) clear from such a supported bar.



## spiral column

A concrete column with spiral reinforcement enclosing a circular core reinforced with vertical bars.



## reinforced concrete column

A concrete column designed to act together with vertical and lateral reinforcement in resisting applied forces. Reinforced concrete columns constituting the principal supports for a floor or roof should have a minimum diameter of 10 in. (254 mm), or if rectangular in section, a minimum thickness of 8 in. (203 mm), and a minimum gross area of 96 sq. in. (61935 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 3/8 in. (9.5 mm), with a maximum center-to-center spacing between spirals of 1/6 of the core diameter, and a clear spacing between spirals not to exceed 3 in. (76 mm) nor be less than 1 1/8 in. (35 mm) or 1/2 times the size of the coarse aggregate.

## compound column

A structural steel column encased in concrete at least 2 1/2 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.

### 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.

### one-way slab

A concrete slab of uniform thickness reinforced in one direction and cast integrally 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

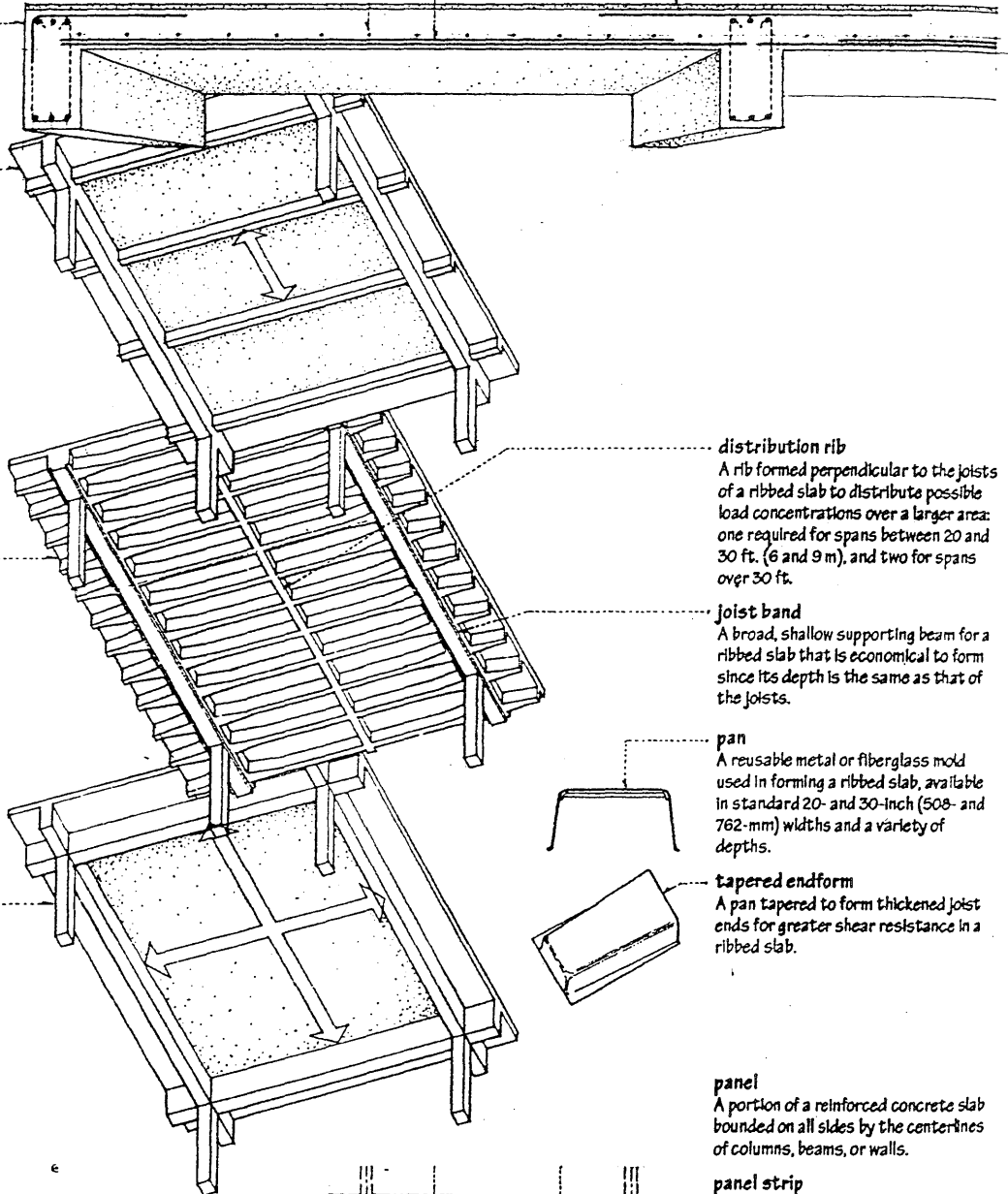
A reinforced concrete slab cast integrally with a series of closely spaced joists which in turn are supported by a parallel set of beams. Ribbed slabs are designed as a series of parallel T-beams and economical for medium spans with light to medium live loads. Also called joist slab.

### two-way slab

A concrete slab of uniform thickness reinforced in two directions and cast integrally with supporting edge beams or bearing walls on four sides. Two-way slabs are economical for medium spans with intermediate to heavy 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: one 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.

### pan

A reusable metal or fiberglass mold used in forming a ribbed slab, available in standard 20- and 30-inch (508- and 762-mm) widths and a variety of depths.

### tapered endform

A pan tapered to form thickened joist ends for greater shear resistance in a ribbed slab.

### panel

A portion of a reinforced concrete slab bounded on all sides by the centerlines of columns, beams, or walls.

### panel strip

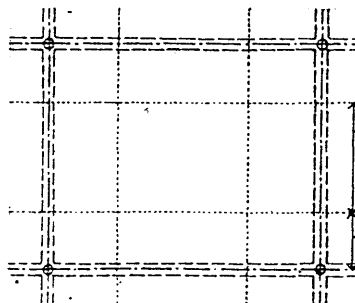
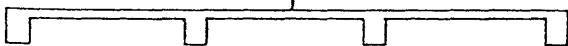
A strip running in each direction of a two-way slab, within which moments per foot are assumed to be constant.

### middle strip

A panel strip, one-half panel in width and symmetrical about the panel centerline.

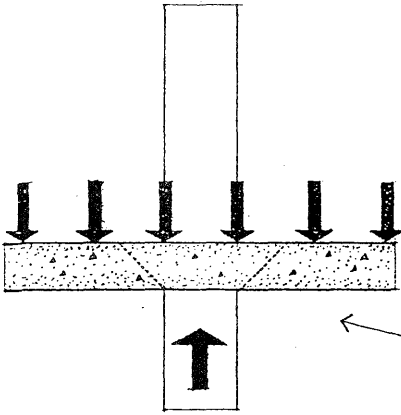
### column strip

A panel strip occupying the adjacent quarter panels on both sides of a column centerline.



## 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.

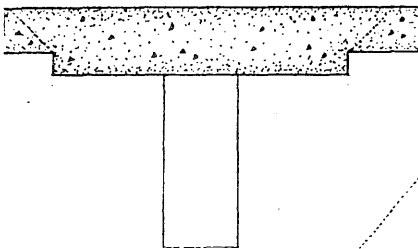


### punching shear

The potentially high-shearing stress developed by the reactive force of a column on a reinforced concrete slab.

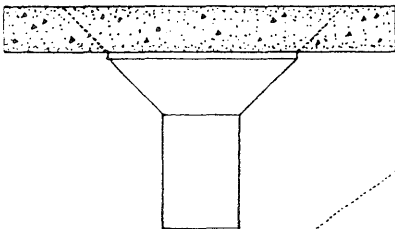
### shear head

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.

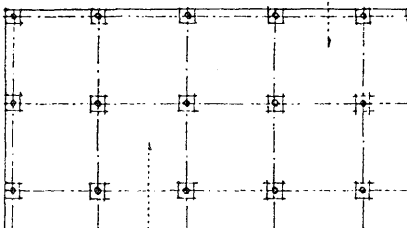


### column capital

The head of a column support for a flat slab enlarged to increase the plate area in shear.

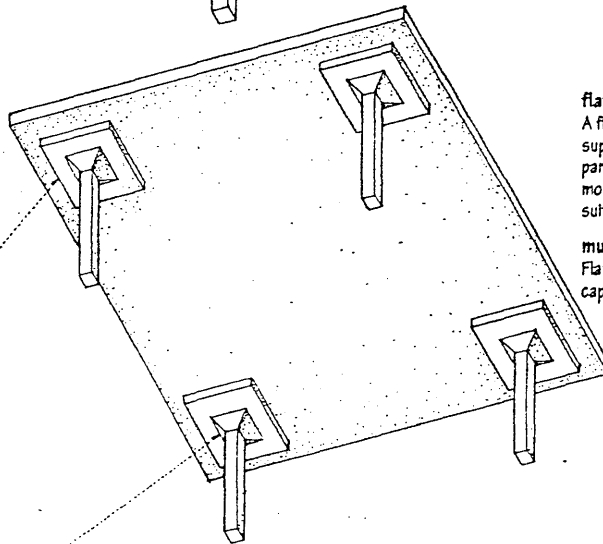
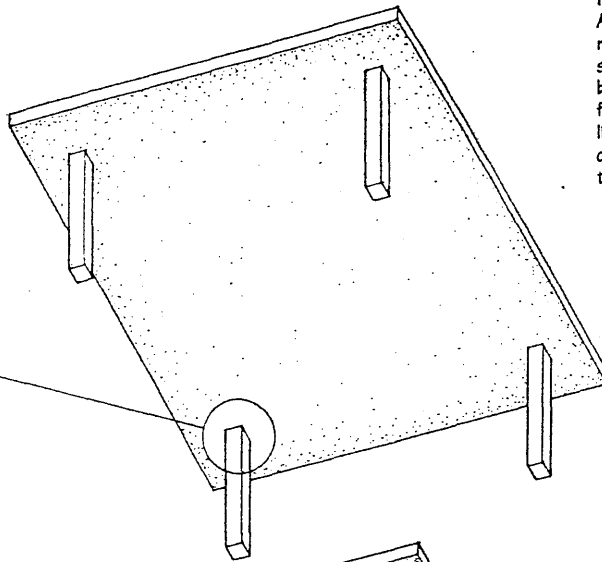
### exterior panel

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.



## 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

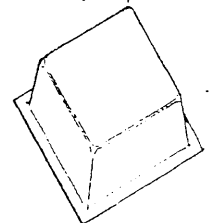
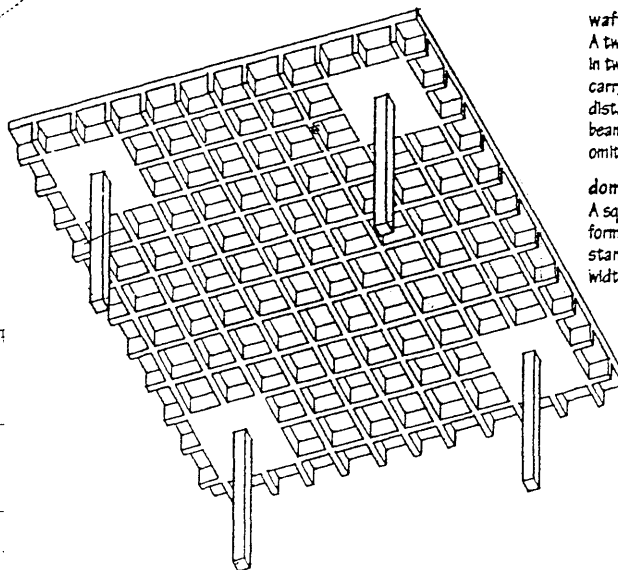
Flat slab construction utilizing column capitals and drop panels.

## 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 19- and 30-in. (483- and 762-mm) widths and a variety of depths.



# REINFORCED CONCRETE

## 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 plank suitable for short spans and uniformly distributed floor and roof loads.

## hollow-core slab

A precast, prestressed concrete plank internally cored to reduce dead weight. Hollow-core slabs are suitable for medium to long spans and uniformly distributed floor and roof loads.

## topping

A layer of reinforced concrete cast to form a composite structural unit with a precast concrete floor or roof deck.

## single tee

A precast, prestressed concrete slab having a broad, T-shaped cross section.

## double tee

A precast, prestressed concrete slab having two stems and a broad cross section resembling the capital letters TT.

## inverted tee

A precast, prestressed ledger beam having a cross section resembling an inverted capital T.

## L-beam

A precast, prestressed ledger beam having a cross section resembling the capital letter L.

## ledger beam

A reinforced concrete beam having projecting ledges for receiving the ends of joists or slabs.

## prestressed concrete

Concrete reinforced by pretensioning or posttensioning high-strength steel tendons within their elastic limit 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.

## pretension

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.

## abutment

A structure for anchoring the reinforcing tendons in the pretensioning 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 in a posttensioned member or temporarily during hardening of a pretensioned concrete member. Also called anchorage.

## jacking force

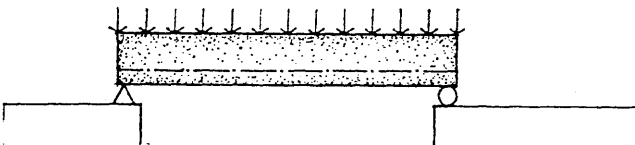
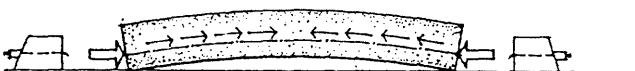
The tensile force exerted temporarily by a jack in the prestressing of a concrete member.

## jack

A hydraulic device for stretching and stressing tendons in the prestressing of a concrete member.

## casting bed

A long horizontal slab on which a number of pretensioned concrete members may be prestressed, formed, and cast simultaneously.



## 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 slippage at the anchorages.

## final prestress

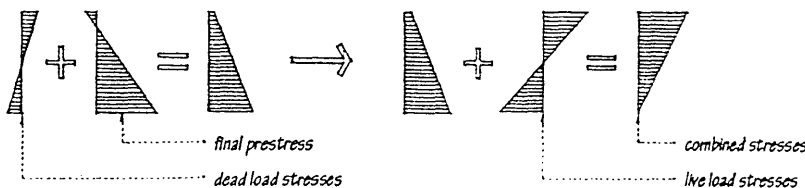
The internal stress that exists in a prestressed concrete member after all losses in prestress have occurred.

## 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.







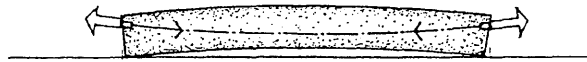
## posttension

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.



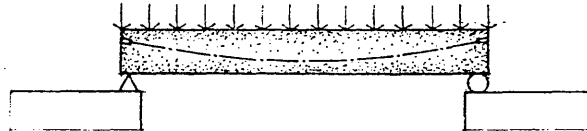
## bonded posttensioning

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.



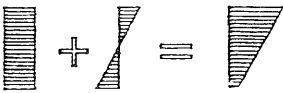
## sheath

A tube for encasing tendons in a posttensioned member to prevent their bonding to the concrete during placement.



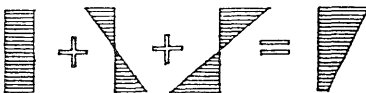
## pre-posttension

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.

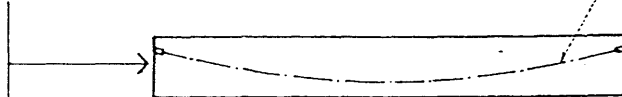


## eccentric tendon

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.

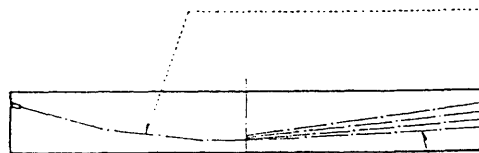
## load balancing

The concept of prestressing a concrete member with draped tendons, theoretically resulting in a state of zero deflection under a given loading condition.



## 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 prestressing 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.

## butterfly roof

A roof having two slopes, each descending inward from the eaves.

## shed roof

A roof having a single slope.

## lean-to

A shed roof with the higher end abutting a wall or larger building.

## penthouse

A shed roof projecting from a wall or the side of a building, as to shelter a door. Also called apprentice, pent, pentice.

## 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.

## pavilion roof

A pyramidal hip roof.

## hipped gable

A roof having a hipped end truncating a gable. Also called Jerkinhead, shreadhead.

## gambrel roof

A ridged roof divided on each side into a shallower slope above a steeper one.

## curb

The arris between an upper and a lower slope on a gambrel or mansard roof.

## rainbow roof

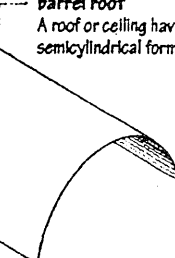
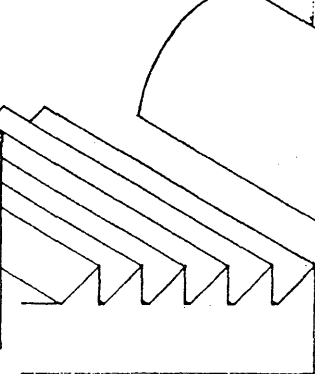
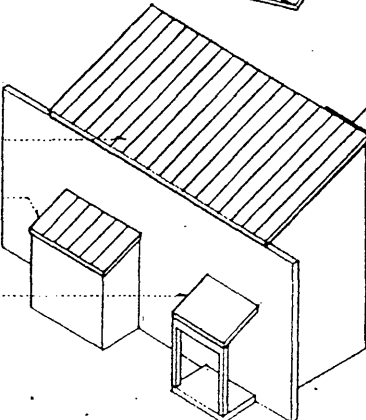
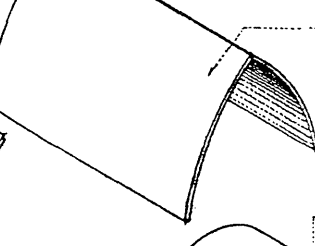
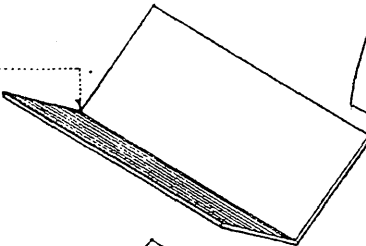
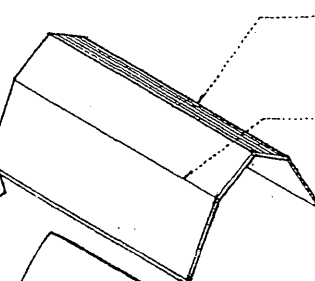
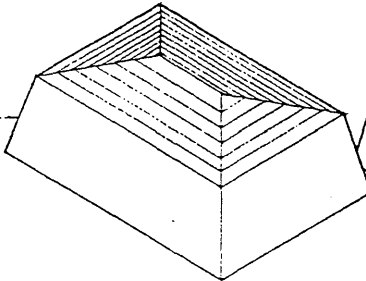
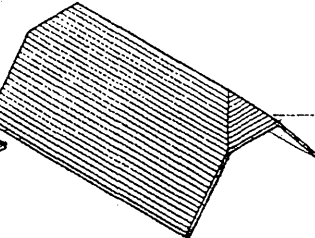
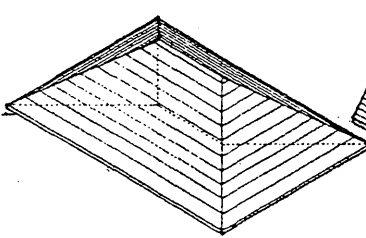
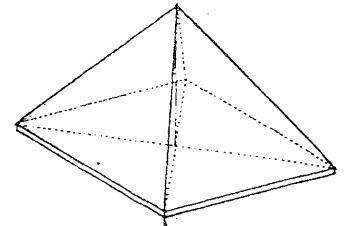
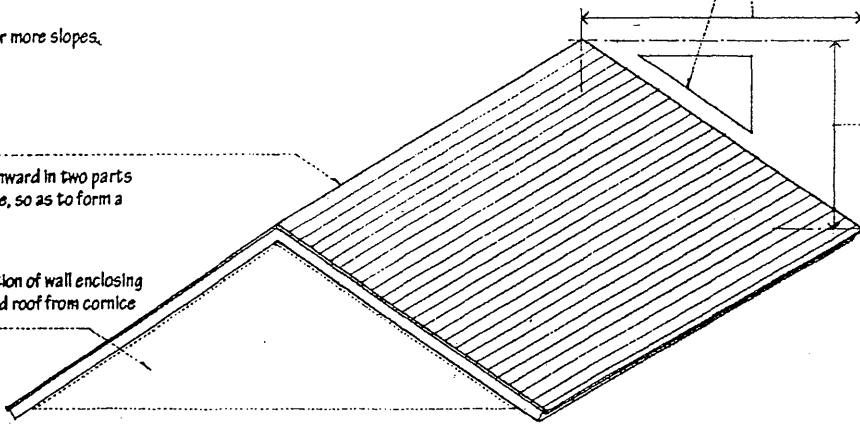
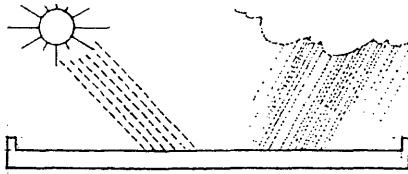
A gable roof in the form of a broad Gothic arch, with gently sloping convex surfaces.

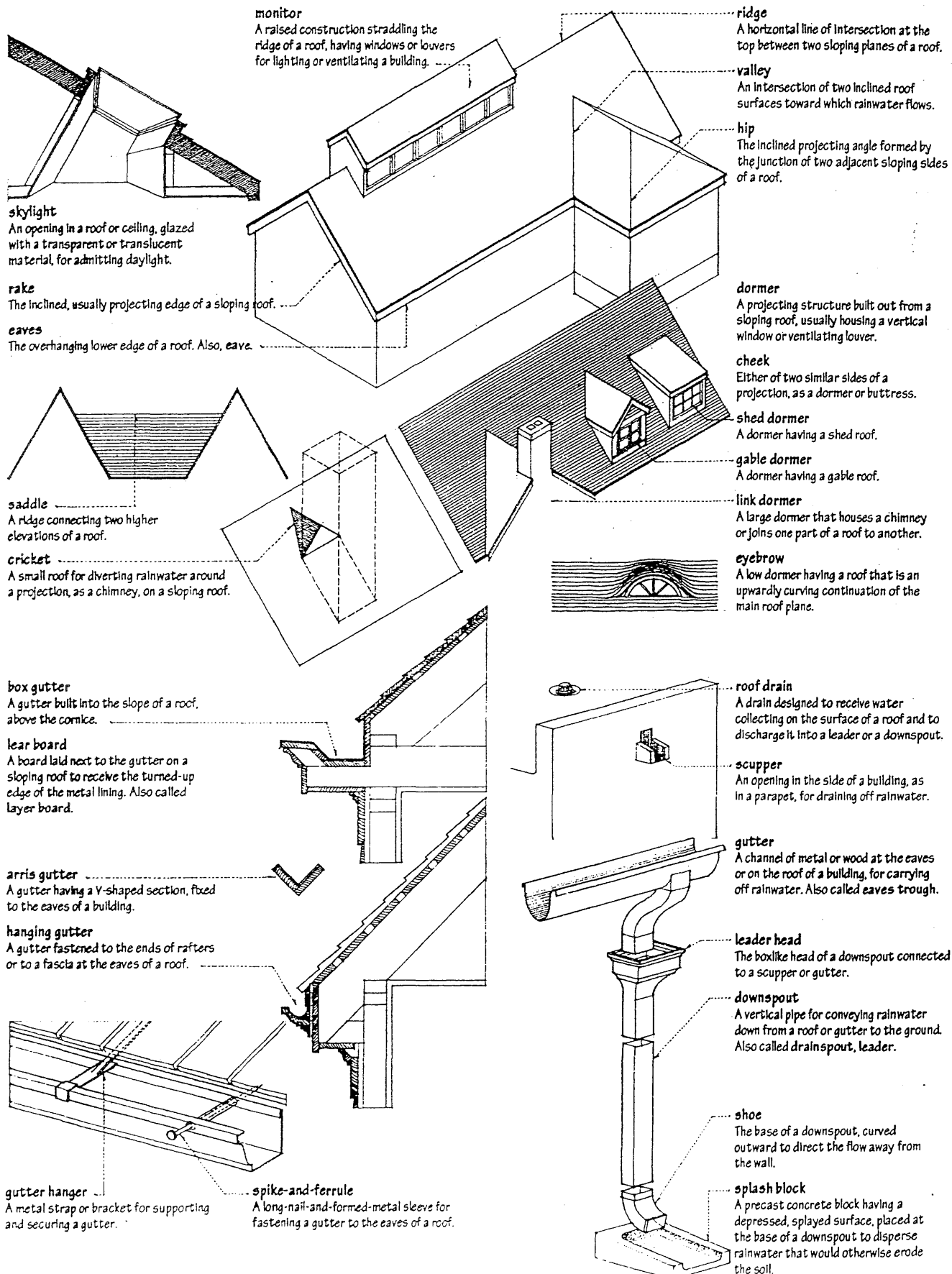
## barrel roof

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 louvers 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.

## skylight

An opening in a roof or ceiling, glazed with a transparent or translucent material, for admitting daylight.

## rake

The inclined, usually projecting edge of a sloping roof.

## eaves

The overhanging lower edge of a roof. Also, eave.

## dormer

A projecting structure built out from a sloping roof, usually housing a vertical window or ventilating louver.

## cheek

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.

## 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.

## lear 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.

## roof drain

A drain designed to receive water collecting on the surface of a roof and to discharge it into a leader or a downspout.

## 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 boxlike 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, splayed 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

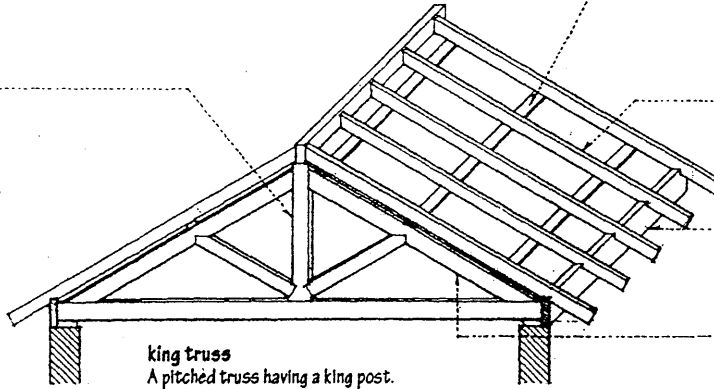
A vertical member from the apex to the bottom chord of a pitched truss.

## 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 enlarged area of a post for supporting the foot of a strut or brace.



**king truss**  
A pitched truss having a king post.

## 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 ridgebeam 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.

## straining piece

A horizontal tie beam uniting the tops of two queen posts. Also called straining beam.

## queen post

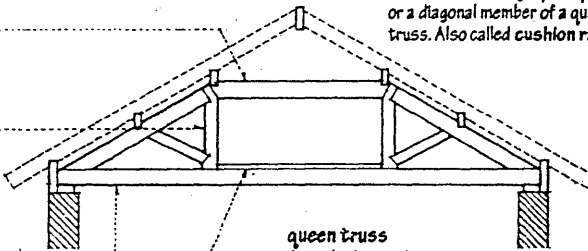
Either of the two vertical web members set at equal distances from the apex of a pitched truss.

## 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

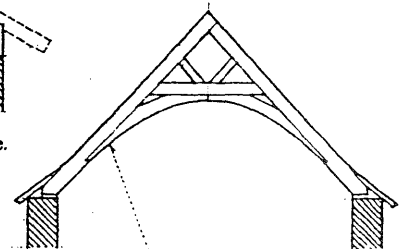
A compression member lying along and dogged to the tie beam of a queen truss and separating the feet of the queen posts.



**queen truss**  
A pitched truss having two queen posts connected by a straining piece.

## auxiliary rafter

A rafter reinforcing a principal rafter or a diagonal member of a queen truss. Also called cushion rafter.



## arch brace

A curved brace, usually used in pairs to support a roof frame and give the effect of an arch.

## 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 of 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

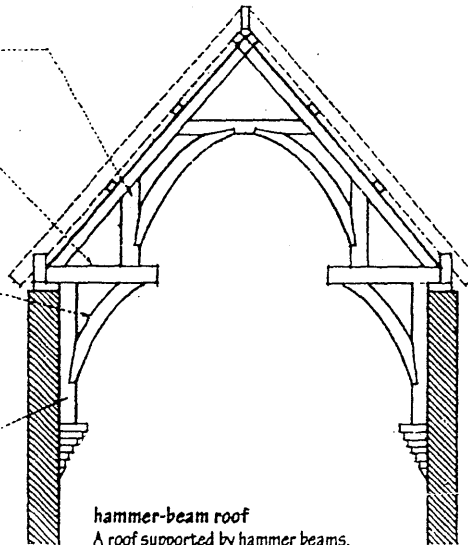
A bracket for supporting a hammer beam.

## bracket

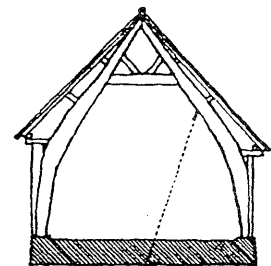
A support projecting horizontally from a wall to bear the weight of a cantilever or to strengthen an angle.

## pendant post

A vertical timber supported at its lower end by a corbel and carrying at its upper end a hammer beam or tie beam.



**hammer-beam roof**  
A roof supported by hammer beams.



## 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.

**ridge board**

A horizontal timber at the ridge of a roof, to which the upper ends of the rafters are fastened. Also called *ridgepole*, *ridgepiece*.

**roof framing**

The act, process, or manner of constructing the structural frame of a roof.

**couple**

A pair of rafters connected by a collar beam or tie beam. Also called *couple-close*.

**collar beam**

A horizontal timber uniting two opposing common rafters at a point below the ridge, usually in the upper half of the rafter length. Also called *collar tie*.

**rafter**

Any of a series of small, parallel beams for supporting the sheathing and covering of a pitched roof.

**ceiling joist**

A joist for carrying the finish ceiling of a room.

**knee wall**

A short wall supporting rafters at some intermediate position along their length.

**bird's mouth**

A right-angled notch cut on the underside of a rafter to fit over a longitudinal member, as a wall plate.

**seat 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*.

**top cut**

A plumb cut at the upper end of a rafter where it butts against a ridgeboard.

**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.

**jack**

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.

**valley 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.

**barge couple**

A pair of rafters supporting the part of a gable roof that projects beyond the gable wall.

**bargeboard**

A board, often carved, attached to the projecting end of a gable roof. Also called *vergeboard*.

**outrigger**

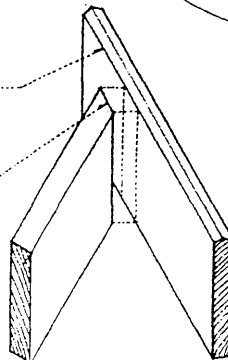
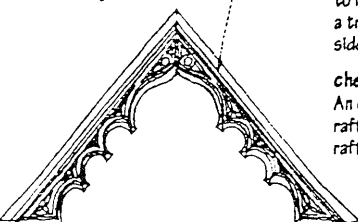
A beam extending outward from a main structure to support the projection of a floor or roof.

**backing**

A bevel 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.

**cheek 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*.



# ROOF

## 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 break joints to form a weathertight 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 a 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.

## ridgecap

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

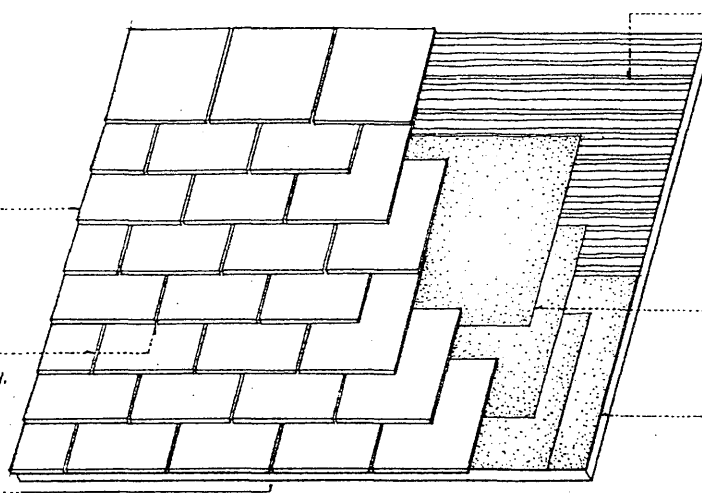
A course of shingles laid with the butts slightly above or below the one adjacent.

## doubling 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.



## 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

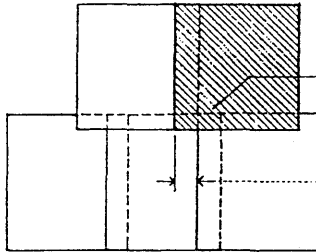
An additional layer of underlayment cemented to a roof deck to prevent melting ice and snow from backing up under the roofing along the eaves.

## 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

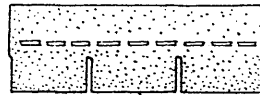
The distance by which a shingle, slate, or roofing tile overlaps an adjacent one along its side edge. Also called **endlap**.

## 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 on 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

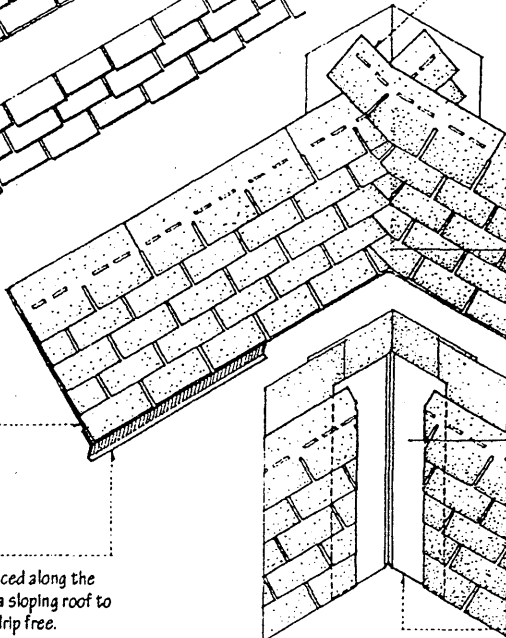
A valley at which shingles or slates are not laid to the intersection, exposing a lining of sheet metal or roll roofing.

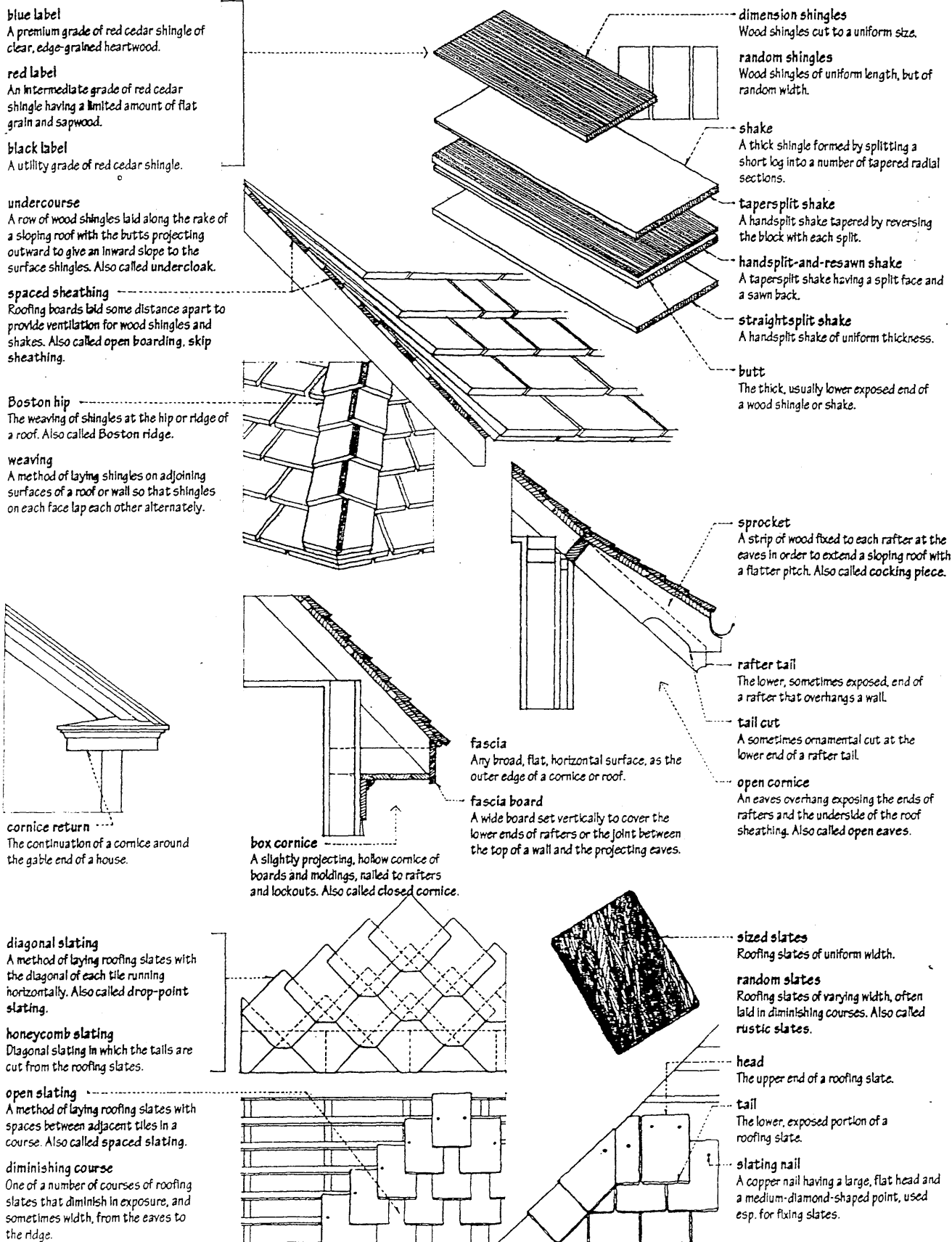
## valley flashing

A wide strip of sheet metal or roofing felt for lining the valley of a roof.

## drip edge

A metal molding placed along the eaves and rakes of a sloping roof to allow rainwater to drip free.





# ROOF

## roofing tile

Any of various clay or concrete tiles for covering a roof.

## field tile

One of the roofing tiles covering the main expanse of a roof.

## hip tile

A convex roofing tile for covering the hip of a roof. Also called bonnet tile.

## ridge tile

A convex, sometimes decorated roofing tile for covering the ridge of a roof. Also called crown tile.

## eaves course

A first course of shingles, slates, or tiles on a roof.

## barge course

A row of slates or tiles placed on and projecting over the raking edges of a gable.

## rake tile

A roofing tile formed to cover the rake of a sloping roof.

## arris tile

An L-shaped roofing tile for covering the ridge, hip, or rake of a roof. Also called angle tile.

## oil-canning

The slight waviness of a sheet metal surface.

## ridge roll

A rounded cap for covering the ridge of a roof.

## corrugated roofing

A roof covering of corrugated sheets of galvanized iron, coated steel, aluminum, fiberglass, or reinforced plastic.

## copper roofing

A roof covering of copper sheets, joined by standing seams.

## tin roofing

A roof covering of flexible tinplate or terneplate.

## Monel metal

Trademark for a brand of an alloy consisting mainly of nickel and copper.

## hold-down clip

A metal clip for securing lengths of sheet metal.

## overcloak

The part of a sheet of metal roofing that laps over a sheet beneath it at a drip or seam.

## undercloak

The lower sheet of metal roofing at a drip or seam.

## cleat

A strip of metal or wood attached to a surface to restrain or support an element or member.

## tile tie

A twisted wire tie extending from the eaves to the ridge of a roof, to which roofing tiles are secured.

## mission tile

A tapered, semicylindrical roofing tile laid convex side up to overlap flanking, similar tiles laid concave side up. Also called Spanish tile.

## imbrex

A tapered, semicylindrical roofing tile laid convex side up.

## tegula

A tapered, semicylindrical roofing tile laid concave side up.

## pantile

A roofing tile having an S-shaped cross section, laid so the downturn of one overlaps the upturn of the next in the same course.

## pan-and-roll tiling

A system of roofing tiles consisting of tapered, semicylindrical tiles overlapping the flanges of flat undertiles in the same course.

## interlocking tile

A flat, rectangular roofing tile having a groove along one edge that fits over a flange in the next tile in the same course.

## shingle tile

A flat, rectangular roofing tile laid in an overlapping pattern.

## batten

A horizontal wood strip on which roofing tiles or slates are hung.

## tilting fillet

A wooden strip of triangular section used to raise the edge of a double eaves course and ensure that the tails of the lowest tiles bed tightly on each other. Also called arris fillet.

## 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.

## 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.

## 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.

## 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.

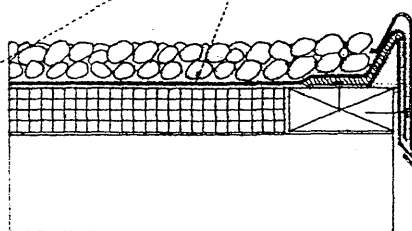
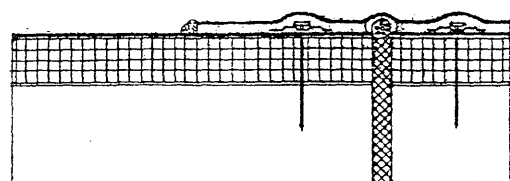
## bead

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.

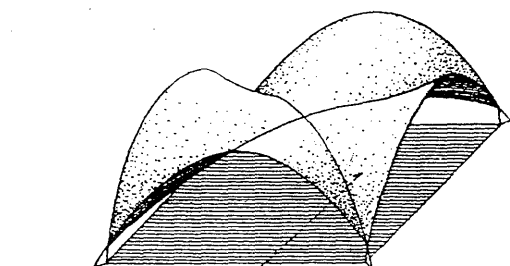


**single-ply roofing**  
A sheet of elastomeric material, as neoprene, EPDM, or PVC, having seams fused by heat or a solvent, fixed to a roof deck with adhesive, mechanical fasteners, or by the weight of a gravel ballast. Also called elastomeric roofing.

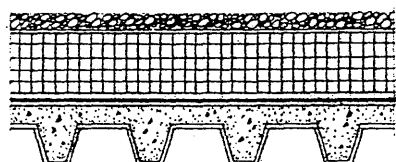
**elastomeric**  
Having the elastic qualities of natural rubber.

**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.

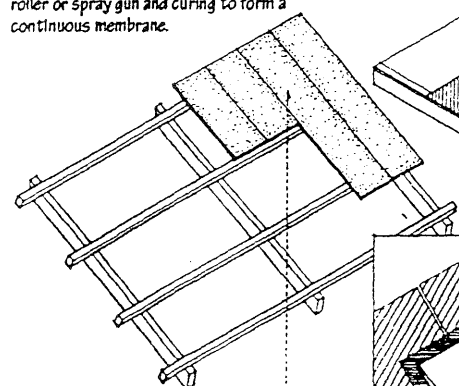


**fluid-applied roofing**  
A continuous covering for roofs of complex geometry, consisting of an elastomeric material, as neoprene, Hypalon, or butyl rubber, applied in multiple coats with a roller or spray gun and curing to form a continuous membrane.

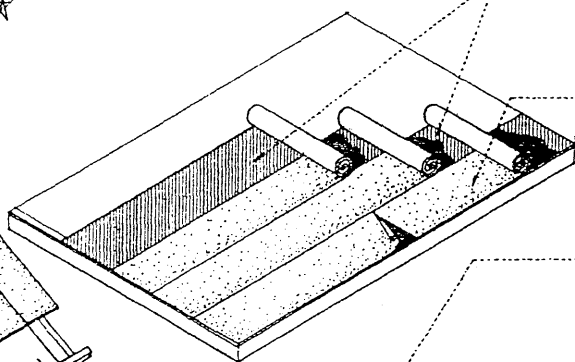


**selvage**  
The edge of a sheet of roll roofing that is free of granules and most of the asphalt coating so as to provide a better bond with the lap of the next sheet.

**roll roofing**  
A roofing material consisting of felt saturated with asphalt and surfaced on the weather side with a harder asphalt mixed with mineral or glass fibers, and a covering of mineral granules.



**structural insulating roof deck**  
A cementitious insulating board of lightweight aggregate or wood fibers bonded under pressure with portland cement, having a factory-finished underside for use on roofs with exposed beams.



**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 matter must be dissolved in a solvent, emulsified, or heated to a liquid state.

**asphalt**  
A brownish-black mixture of bitumens obtained from native 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.

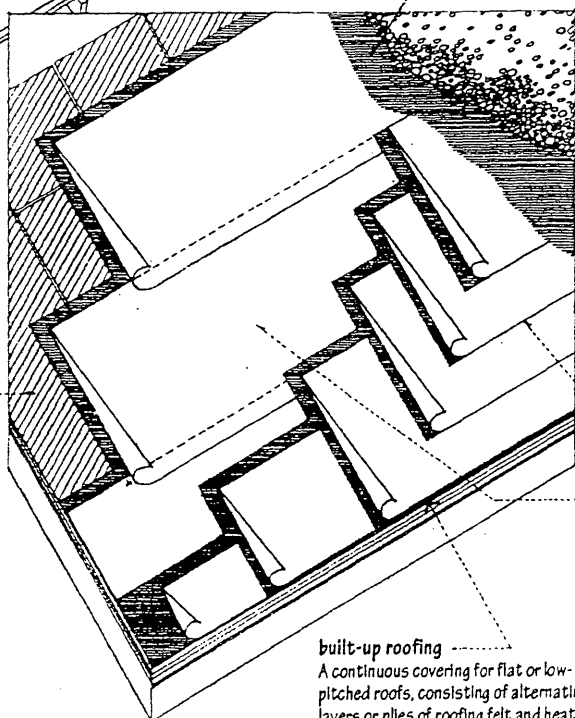
**cap sheet**  
A sheet of coated, mineral-surfaced felt, used as the top ply in a built-up roof.

**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 matted, fibrous material impregnated with a bituminous material for increased toughness and resistance to weather. Also called roofing paper.

**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.

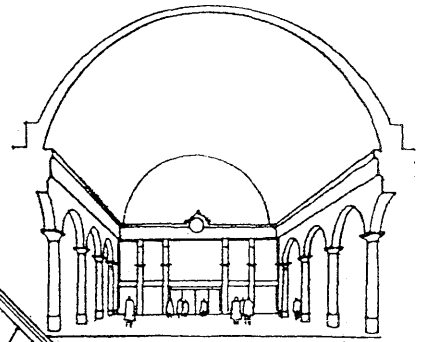
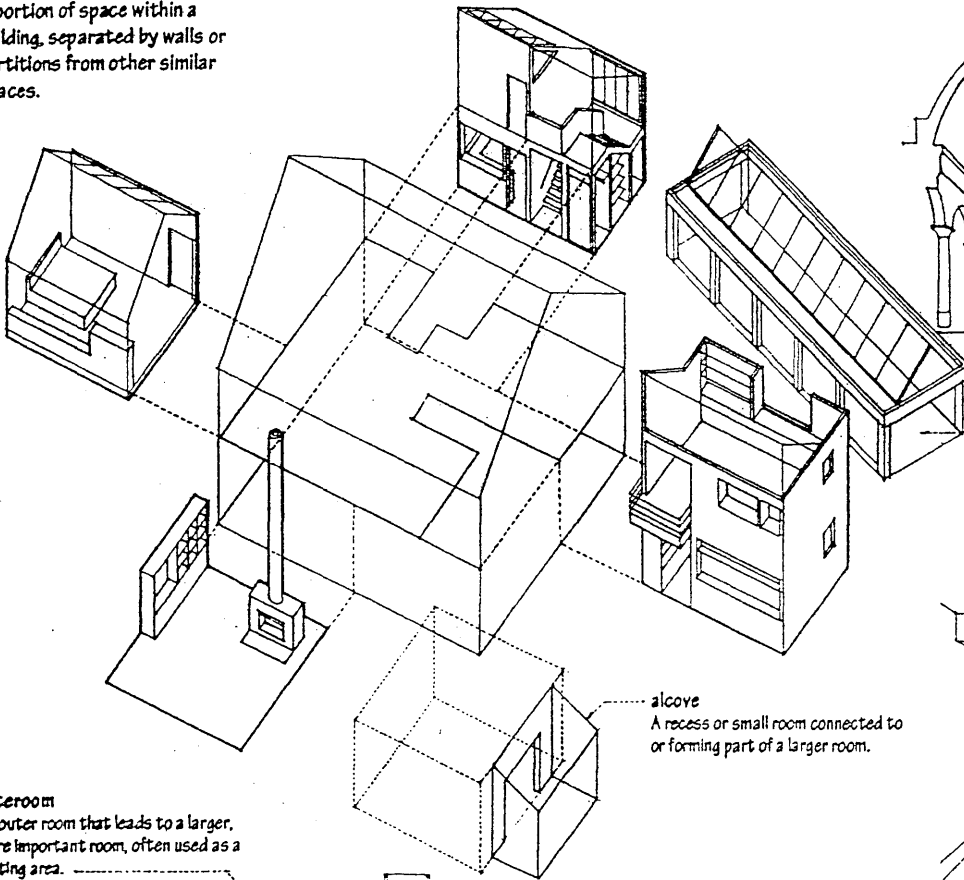
**roofing bond**  
A guarantee by a surety company that a roofing manufacturer will repair a roof membrane or covering under the conditions listed in the bonding contract.



**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.



**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.

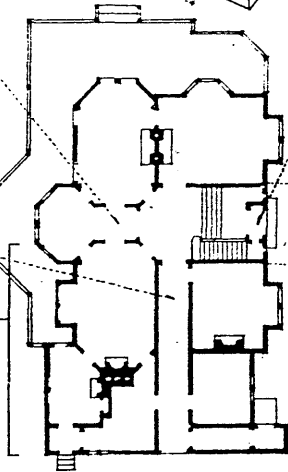
**anteroom**  
An outer room that leads to a larger, more important room, often used as a waiting area.

**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.

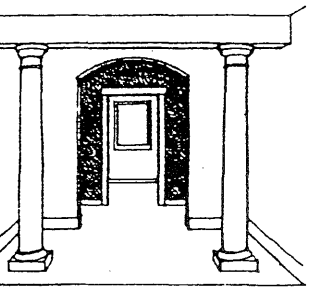
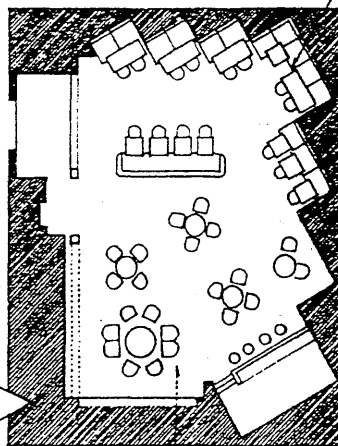


**alcove**  
A recess or small room connected to or forming part of a larger room.

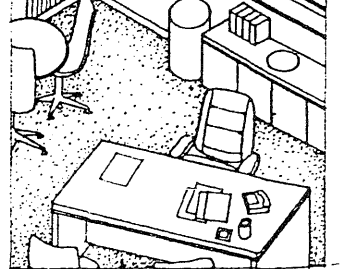
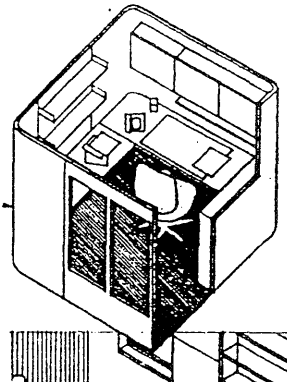
**vestibule**  
A small entrance hall between the outer door and the interior of a house or building.

**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.

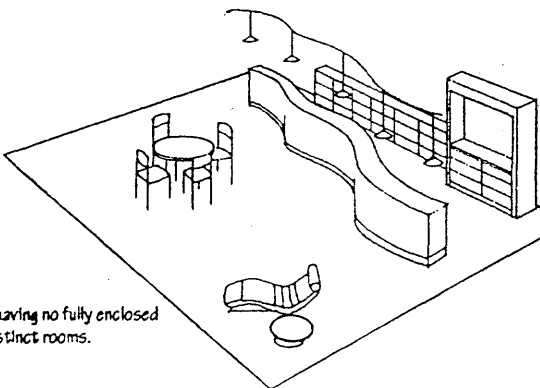


**enfilade**  
An axial arrangement of doorways connecting a series of rooms so as to provide a vista down the entire length of the suite.



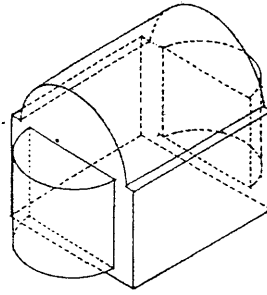
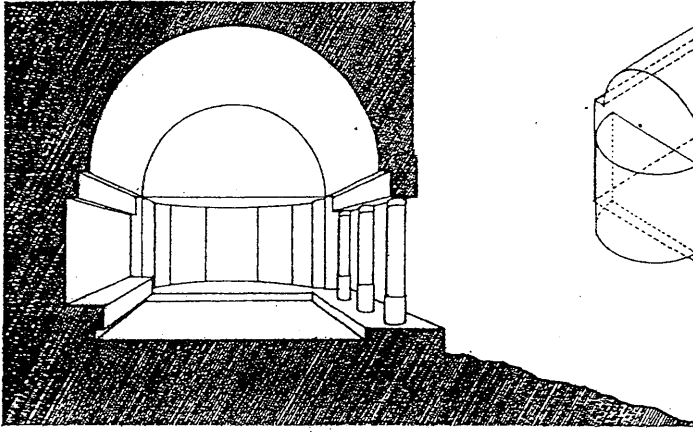
**loose fit**  
A free and unrestrained arrangement of furniture groupings that does not necessarily correspond to the form or structure of the surrounding space.

**open plan**  
A floor plan having no fully enclosed spaces or distinct rooms.



**mass**

The physical volume or bulk of a solid body.

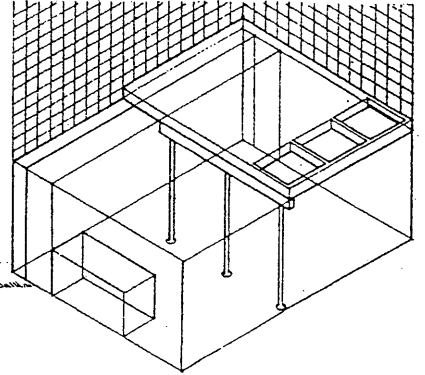


**space**

The three-dimensional field in which objects and events occur and have relative position and direction, esp. a portion of that field set apart in a given instance or for a particular purpose.

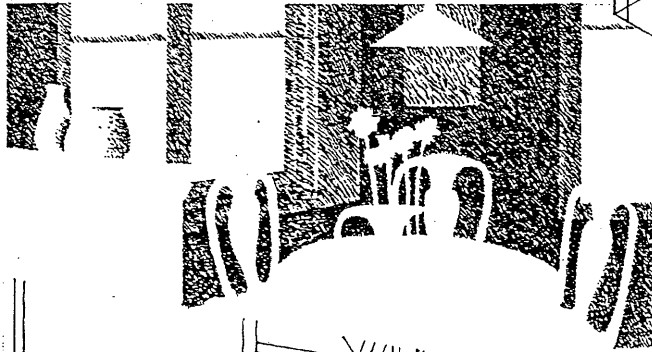
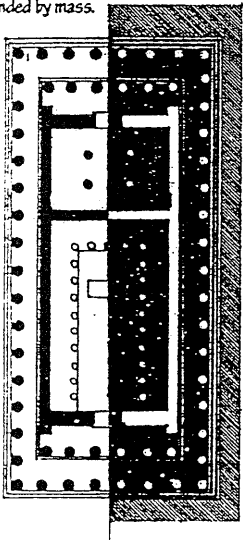
**Euclidean space**

Ordinary two- or three-dimensional space in which Euclid's definitions and axioms apply. Also called Cartesian space.



**void**

An empty space contained within or bounded by mass.



**place**

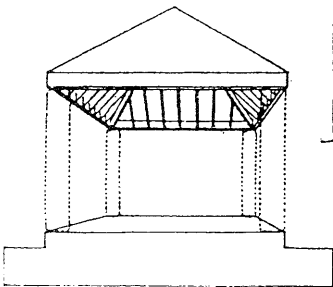
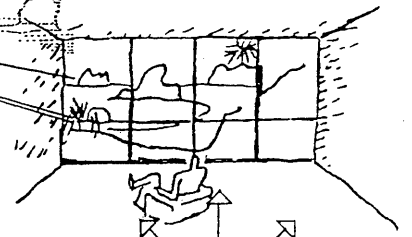
A physical environment having particular characteristics or used for a particular purpose.

**ambience**

The mood, character, or atmosphere of an environment or milieu. Also, *ambience*.

**animated**

Full of life, activity, movement, or spirit.

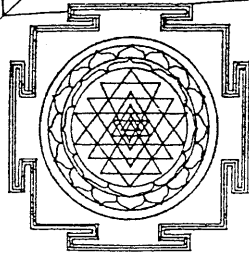


**refuge**

A place affording shelter, protection, or safety from danger or distress.

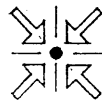
**repose**

A place of rest and tranquility.



**center**

A point or place upon which interest, activity, or emotion focuses.



**focus**

A central point of attraction, attention, or activity.

**outlook**

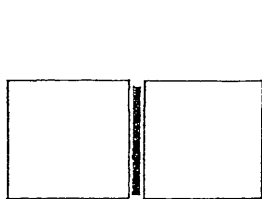
A view from a particular place, or the place offering a view.

**prospect**

An outlook over a region or in a particular direction, or the place that commands such a view.

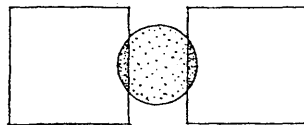
## adjacent spaces

Two spaces abutting or contiguous with each other, esp. when having a common boundary or border.



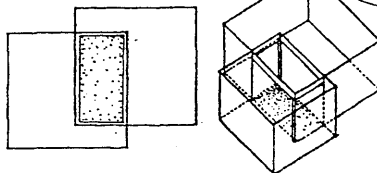
## linked spaces

Two spaces joined or connected by a third intervening space.



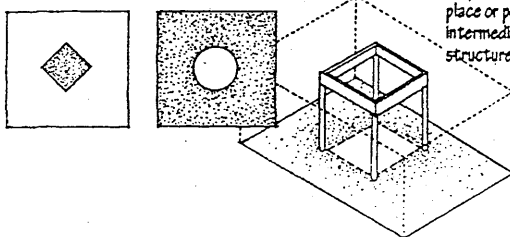
## interlocking spaces

Two spaces interwoven or fit into each other so as to form a zone or field of shared space.



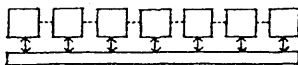
## embedded space

A space enveloped or incorporated as an essential part of a larger space.



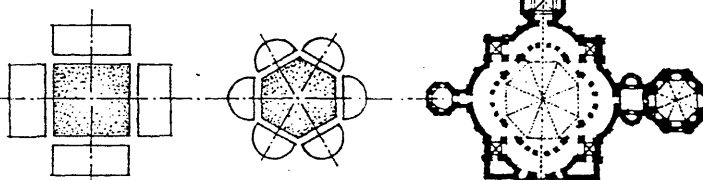
## linear organization

Spaces extended, arranged, or linked along a line, path, or gallery.



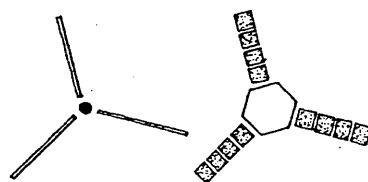
## centralized organization

Spaces gathered about or coming together at a large or dominant central space.



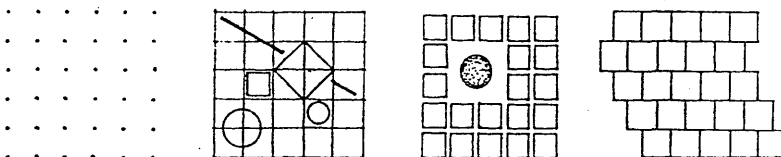
## radial organization

Spaces arranged like radii or rays from a central space or core.



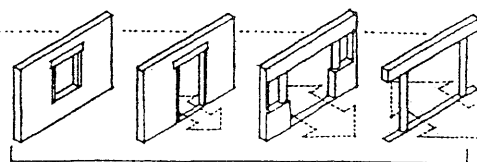
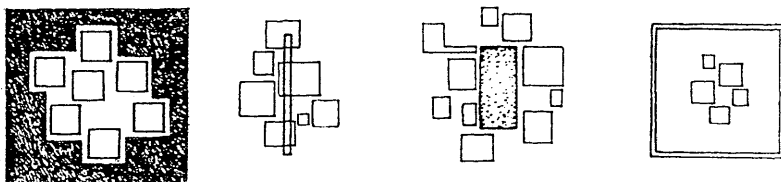
## grid organization

Spaces organized with reference to a rectangular system of lines and coordinates.



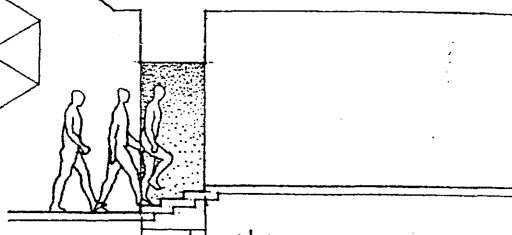
## clustered organization

Spaces grouped, collected, or gathered closely together and related by proximity rather than geometry.



## transition

Movement, passage, or change from one form, state, or place to another.



## interstice

A small or narrow intervening space between things or parts.

## mediating space

A space occupying an intermediate place or position, esp. to serve as an intermediary between differing forms, structures, or functions.

## edge

A line or narrow part where an area begins or ends.

## threshold

A place or point of entering or beginning.

## circulation

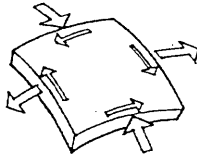
The passage of persons or things from one place to another or through an area.

## path

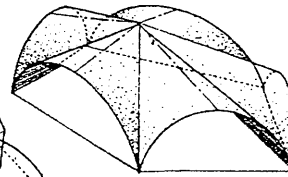
A route or course along which movement occurs, or the pattern of such movement.

**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**

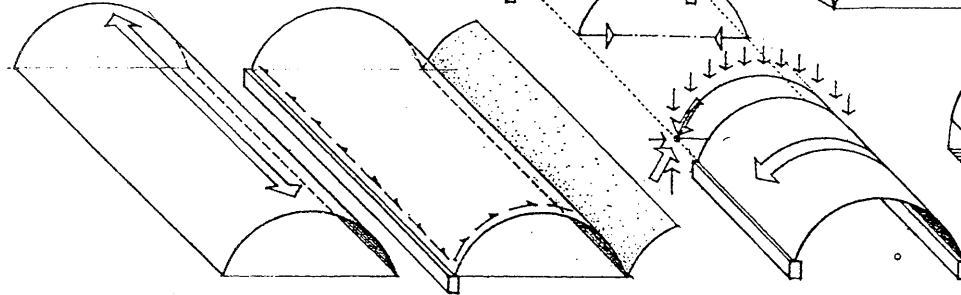
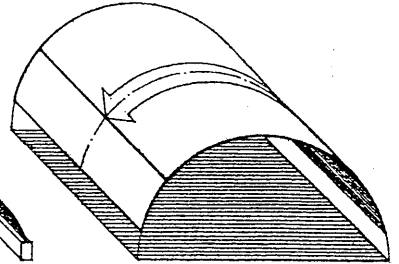
A shell structure constructed of reinforced concrete.



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.

**barrel shell**

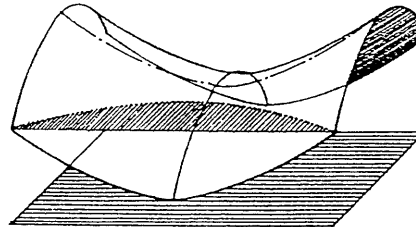
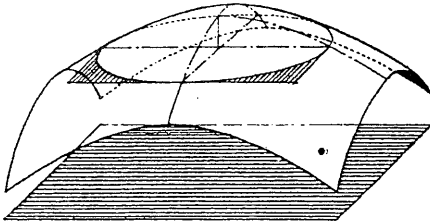
A rigid cylindrical shell structure.

If the length of a barrel shell is three or more times its transverse span, it behaves as a deep beam with a curved section spanning in the longitudinal direction. Edges are stiffened with beams or adjoining shells.

If it is relatively short, it exhibits archlike action. Tie rods, transverse rigid frames, or the like are required to counteract the outward thrusts of the arching action.

**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.

**elliptic paraboloid**

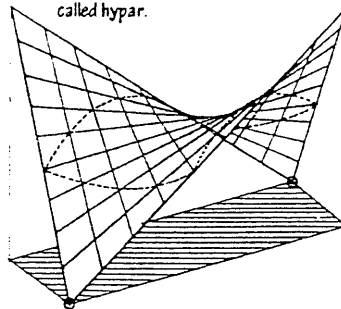
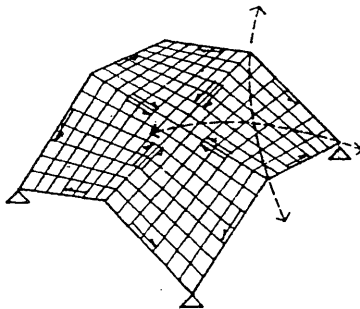
A surface generated by sliding a vertical parabola with downward curvature along a perpendicular parabola with downward curvature. Its horizontal sections are ellipses while its vertical sections are parabolas.

**hyperbolic paraboloid**

A surface generated by sliding a parabola with downward curvature along a parabola with upward curvature, or by sliding a straight line segment with its ends on two skew lines. It can be considered to be both a translational and a ruled surface. Also called hyper.

**paraboloid**

A surface all of whose intersections by planes are either parabolas and ellipses or parabolas and hyperbolas.

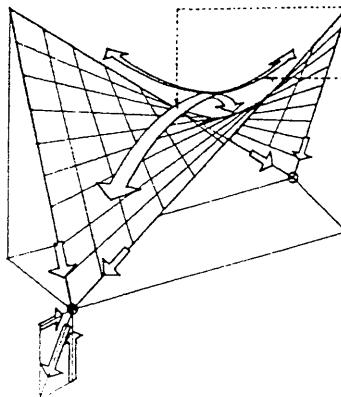
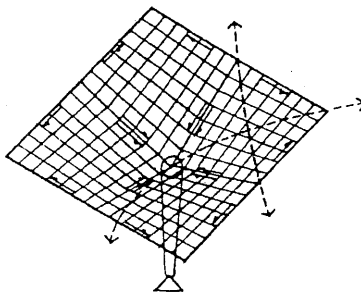
**saddle surface**

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**

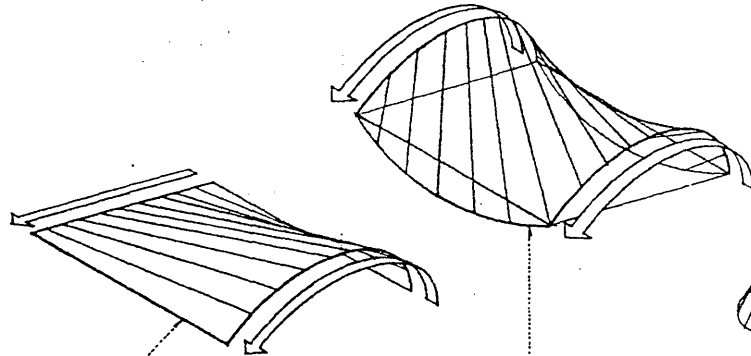
Having opposite curvatures at a given point.



# SHELL

## 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.

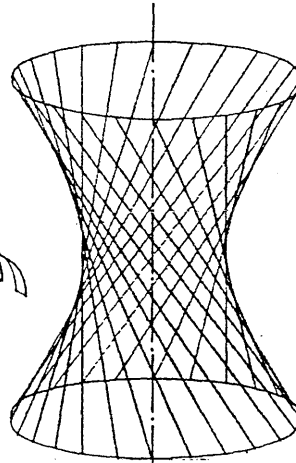


## conoid

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.

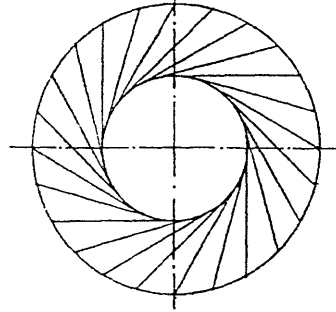
## hyperboloid

A surface having a finite center with certain plane sections that are hyperbolas 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 hyperbolas.



## rotational surface

A surface generated by rotating a plane curve about an axis.

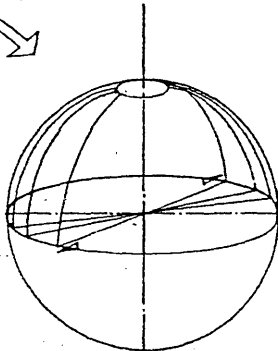
## synclastic

Having similar curvatures at a given point.



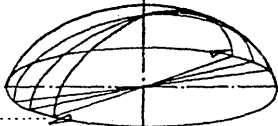
## spherical surface

A rotational surface generated by the revolution of a circular arc about a vertical axis.



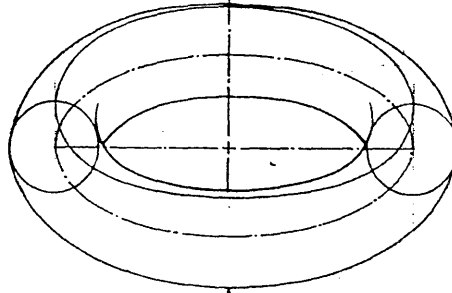
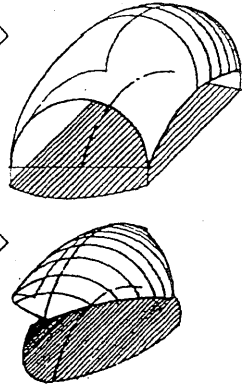
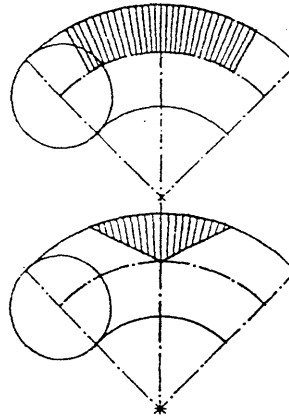
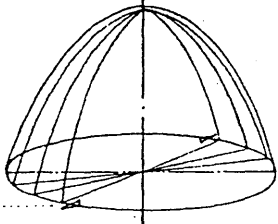
## elliptical surface

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

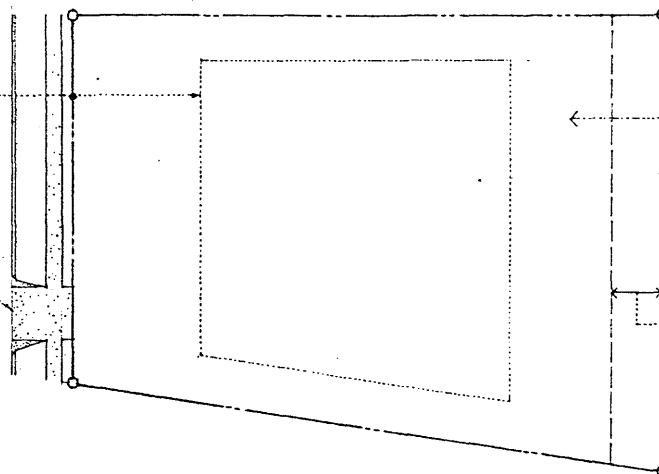
The minimum required distance from every structure to the property lines of a lot, established by a zoning ordinance to provide for air, light, solar access, and privacy.

## 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.



Work done at a site in preparation for a construction project, as excavation, sheeting, shoring, and grading.

## site

The geographic location of a construction project, usually defined by legal boundaries.

## property line

One of the legally defined and recorded boundaries of a parcel of land. Also called lot line.

## easement

A legal right held by specified persons or the public to make limited use of the land of another, as a right-of-way.

## overburden

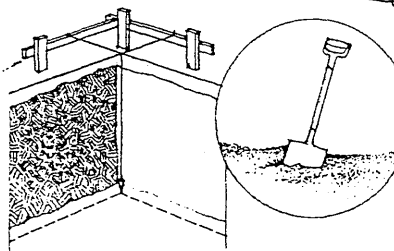
Waste earth and rock overlying a useful mineral deposit, bedrock, or a deposit of sand, gravel, or rock needed for construction. Also called burden.

## 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.

## 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.



## groundbreaking

The act or ceremony of breaking ground for a new construction project.

## earthwork

The excavation and embankment of earth in connection with an engineering operation.

## excavation

The digging and removal of earth from its natural position, or the cavity resulting from such removal.

## 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

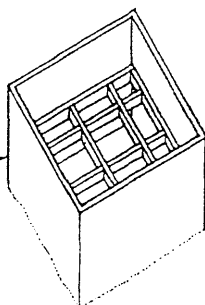
An inclined shore for supporting a wall. Also called raking shore.

## flying shore

A horizontal strut fixed between and supporting two walls above ground level.

## cofferdam

A watertight enclosure constructed underwater or in water-bearing soil and pumped dry to allow access for construction or repairs.

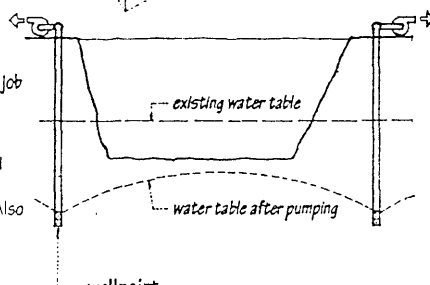


## dewater

To remove water from an excavated job site, usually by draining or pumping.

## boil

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.

## wellpoint

A perforated tube driven into the ground to collect water from the surrounding area so it can be pumped away, as to lower a water table or to prevent an excavation from filling with groundwater.

## tieback

A steel rod or tendon attached to a deadman or a rock or soil anchor to prevent lateral movement of a retaining wall or formwork.

## sheet pile

Any of a number of timber, steel, or precast concrete planks driven vertically side by side to retain earth or prevent water from seeping into an excavation. Also called sheath pile.

## lagging

A number of boards joined together side by side to retain the face of an excavation.

## soldier pile

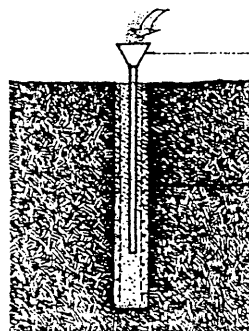
A steel H-section driven vertically into the ground to support horizontal sheeting or lagging. Also called soldier beam.

## tremie

A funnellike device with a pipe or tube for depositing concrete underwater.

## slurry wall

A concrete wall cast in a trench to serve as sheeting and often as a permanent foundation wall, constructed by excavating a trench in short lengths, filling it with a slurry of bentonite and water to prevent the sidewalls from collapsing, setting reinforcement, and placing concrete in the trench with a tremie to displace the slurry.



## SITWORK

### 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.

### 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 downside.

### grade

The ground elevation at any specific 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 drives, 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.

### 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 shore

An upright timber for supporting a dead load 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 inlet of a drain or culvert.

**endwall**

A concrete or masonry retaining wall at the outlet of a drain or culvert.

**site drainage**

The surface and subsurface drainage of a site in order to prevent the collection of excess surface water or groundwater.

**surface drainage**

The grading and surfacing of a site 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.

**curtain drain**

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 drainpipe.

**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**

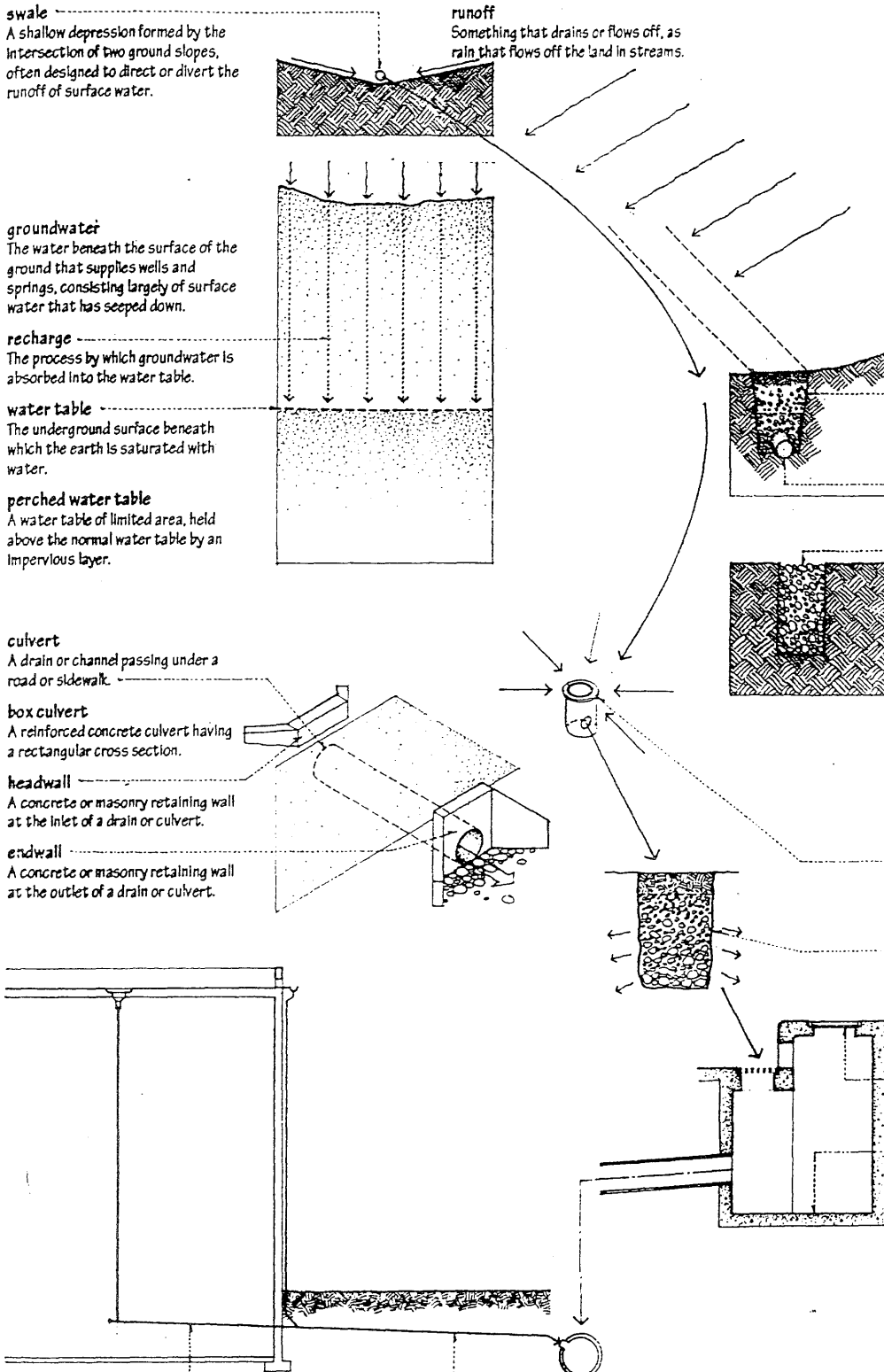
A drain connecting a building storm drain to a storm sewer, combined sewer, or other point of disposal. Also called *house storm sewer*.

**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.



# 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.

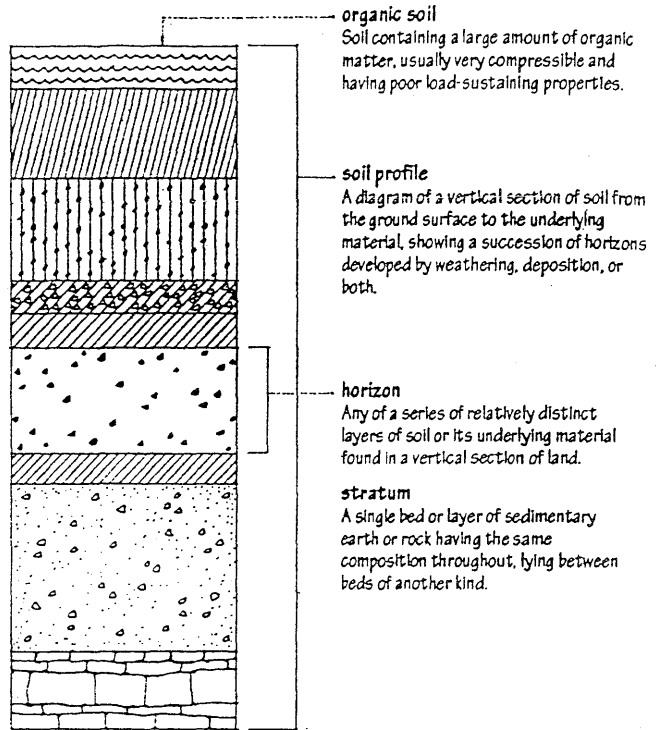
**subsoil**  
The bed or layer of earth immediately beneath the surface soil.

**permafrost**  
Perennially frozen subsoil in arctic or subarctic regions. Also called *pergellisol*.

**bedrock**  
The unbroken, solid rock that underlies all unconsolidated material on the earth's surface, as soil, clay, sand, or rock fragments.

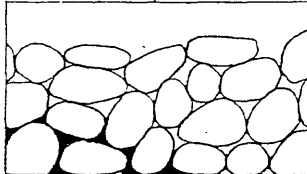
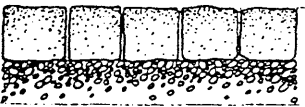
**soil analysis**  
A process for determining the particle-size distribution in an aggregate, soil, or sediment.

**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*.



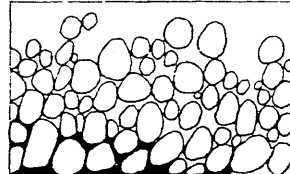
**gravel**  
Small pebbles and stones, or a mixture of these with sand, formed either naturally or by crushing rock, esp. such material that will pass a 3-in. (76 mm) sieve and be retained on a No. 4 (4.8 mm) sieve.

**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.

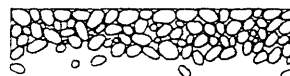
**pebble**  
A small, rounded stone, especially one worn smooth by the action of water.



**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-graded, naturally occurring sand often used as a base or subbase material, having about 10% clay or just enough to make the mixture bind tightly when compacted.

**silt**  
Loose sedimentary material consisting of fine mineral particles between 0.002 mm and 0.05 mm in diameter.



**clay**  
A natural, earthy material that is plastic when moist but hard when fired 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 27% to 40% clay and 20% to 45% sand.

**bentonite**  
A clay formed by the decomposition of volcanic ash, having the ability to absorb large amounts of water and to expand to several times its natural volume.

**loam**  
A rich soil containing a relatively equal mixture of sand and silt and a smaller proportion of clay and organic matter.

**loess**  
An unstratified, cohesive, loamy deposit deposited by wind.

**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.

**plasticity index**

The numerical difference between the liquid limit and the plastic limit of a soil.

**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.

**plastic soil**

A soil that can be rolled into  $\frac{1}{8}$  in. (3.2-mm) diameter threads without crumbling.

**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**

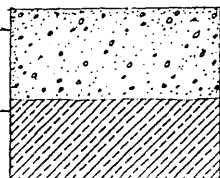
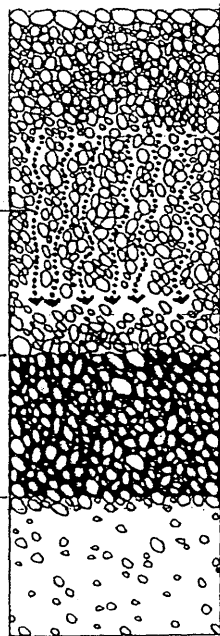
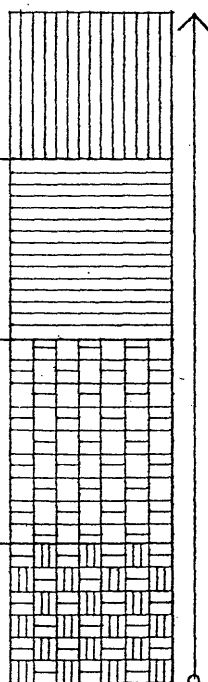
The unit weight of a saturated granular material above which it will gain strength and below which it will lose strength when subjected to rapid deformation.

**pervious soil**

Any permeable soil that allows the relatively free movement of water.

**impervious soil**

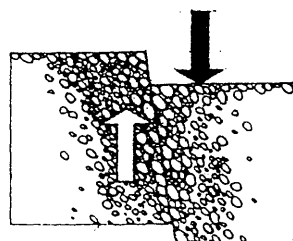
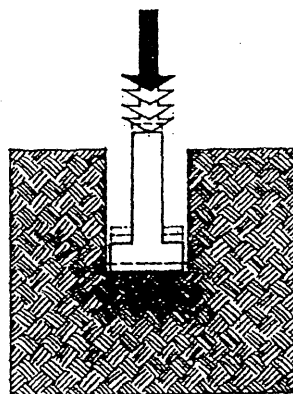
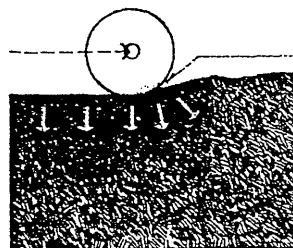
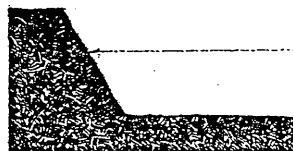
Any fine-grained soil, as clay, having pores too small to permit water to pass except by slow capillary action.

**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 material disclosed by borings or excavations to obtain the information necessary for the design of a foundation system, including the shearing 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.

**soil mechanics**

The branch of civil engineering that deals with the mechanical behavior of soil when compressed or sheared, or when water flows through it.

**soil structure**

The arrangement and aggregation of soil particles in a soil mass.

**core**

An undisturbed, cylindrical sample of earth or rock obtained by means of a core drill and used for analysis and testing of bearing capacity. Also called boring.

**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 sediment by the weight of overlying deposits, or a similar compression of soil, aggregate, or cementitious 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**

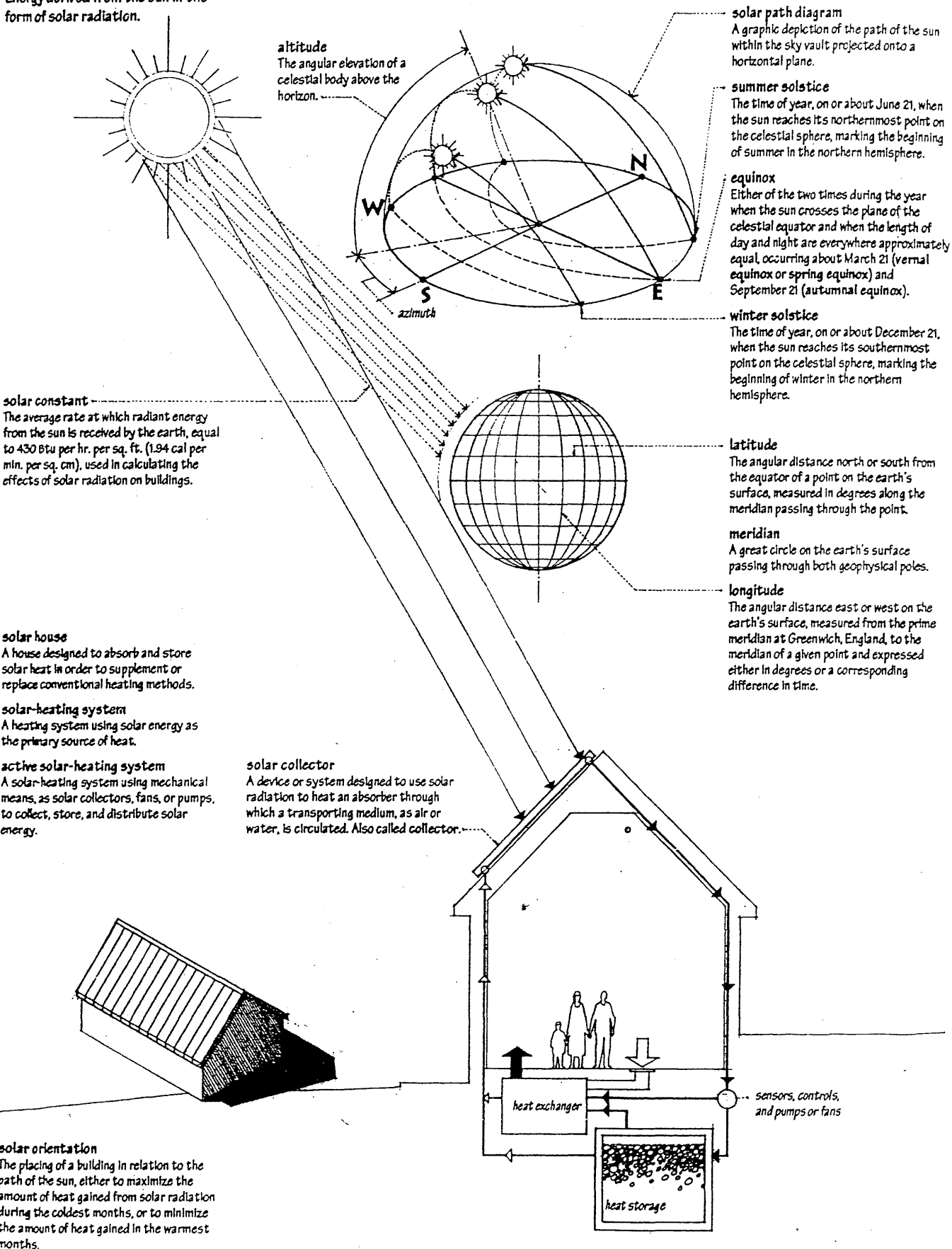
The unit load required to produce a specified penetration into a soil at a specified rate of penetration.

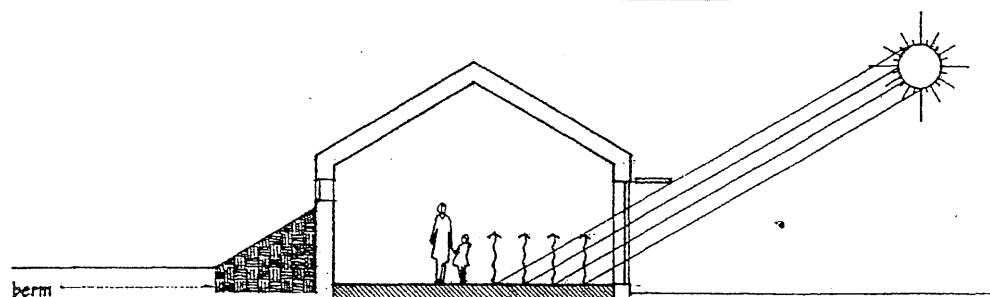
**shearing strength**

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.

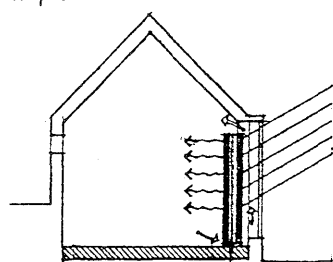
## SOLAR ENERGY

Energy derived from the sun in the form of solar radiation.

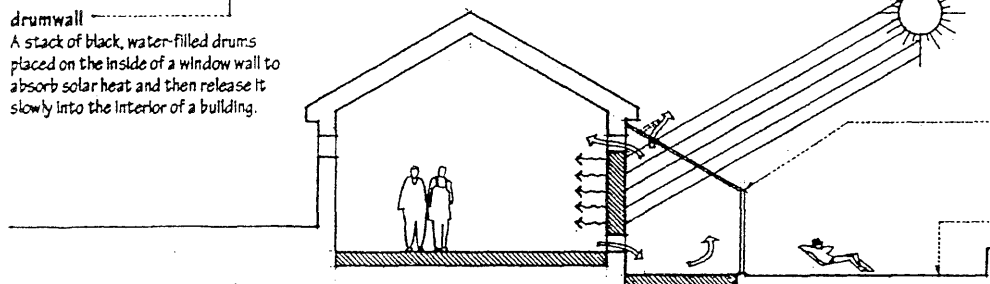




**berm**  
A bank of earth placed against one or more exterior walls of a building as protection against extremes in temperature.



**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.



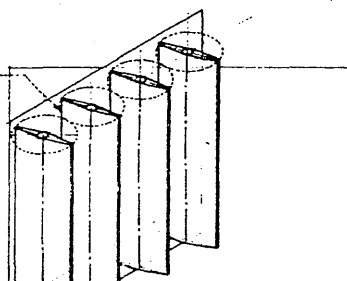
**Trombe wall**  
A glass-fronted exterior masonry wall that absorbs solar heat for radiation into the interior of a building, usually after a time-lag of several hours.

**solarium**  
A glass-enclosed porch, room, or gallery used for sunbathing or for therapeutic exposure to sunlight.

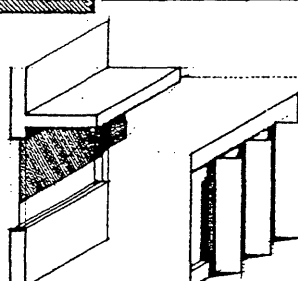
**sunroom**  
A glass-enclosed porch or room oriented to admit large amounts of sunlight. Also called sun parlor, sun porch.

**sun deck**  
A roof, balcony, or terrace that is exposed to the sun and used for sunbathing.

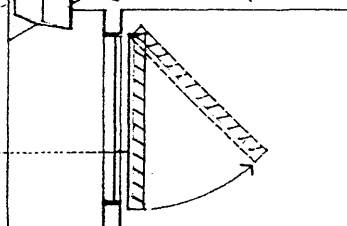
**sun control**  
Any of various exterior devices for regulating the amount of solar heat and sunlight that enters a window, consisting of movable horizontal or vertical fins controlled manually or operated automatically with time or photoelectric controls.



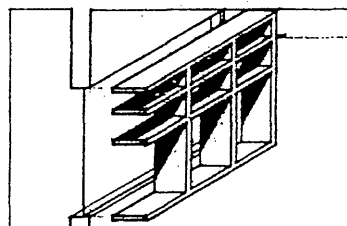
**sunshade**  
Any of various exterior devices consisting of fixed horizontal or vertical fins angled to shield a window from direct sunlight.



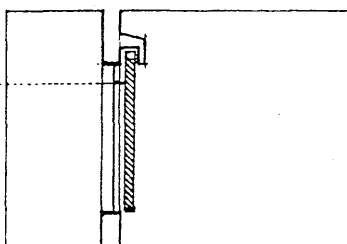
**shutter panel**  
A louvered awning the metal fins of which are angled to shade a window from direct sunlight and glare while preserving the outside view and admitting soft, diffused light.



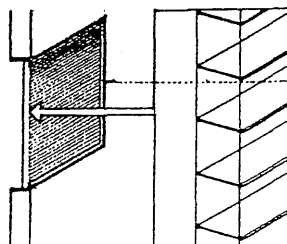
**brise-soleil**  
A screen, usually of louvers, placed on the outside of a building to shield the windows from direct sunlight.



**shutter blind**  
A manually or electrically controlled exterior venetian blind for protecting a building interior from solar gain and glare.



**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.



# 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.

## amplitude

The maximum deviation of a wave or alternating current from its average value.

## frequency

The number of cycles per unit time of a wave or oscillation.

## hertz

The SI unit of frequency, equal to one cycle per second. Abbr.: Hz

## pitch

The predominant frequency of a sound as perceived by the human ear.

## octave

The interval between two frequencies having a ratio of 2:1.

## wave front

A surface of a propagating wave composed at any instant of all points having identical phase; usually perpendicular to the direction of propagation.

## 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

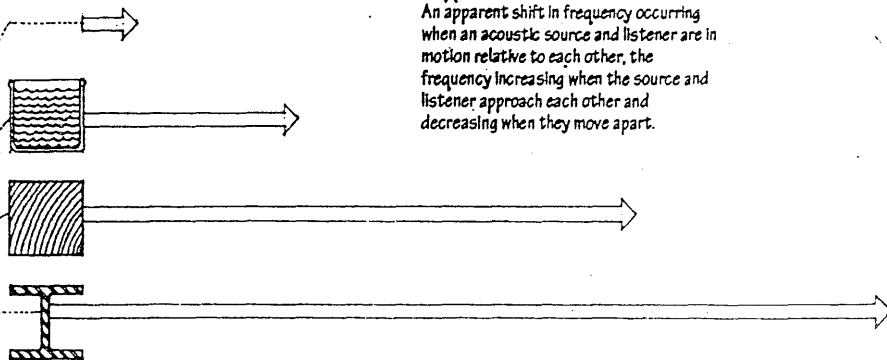
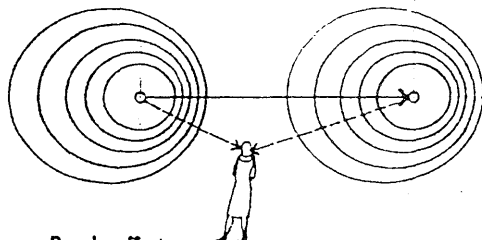
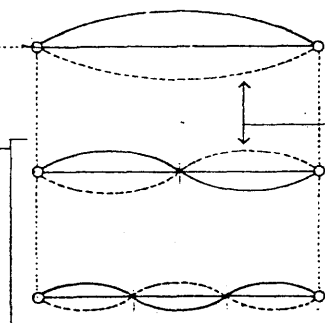
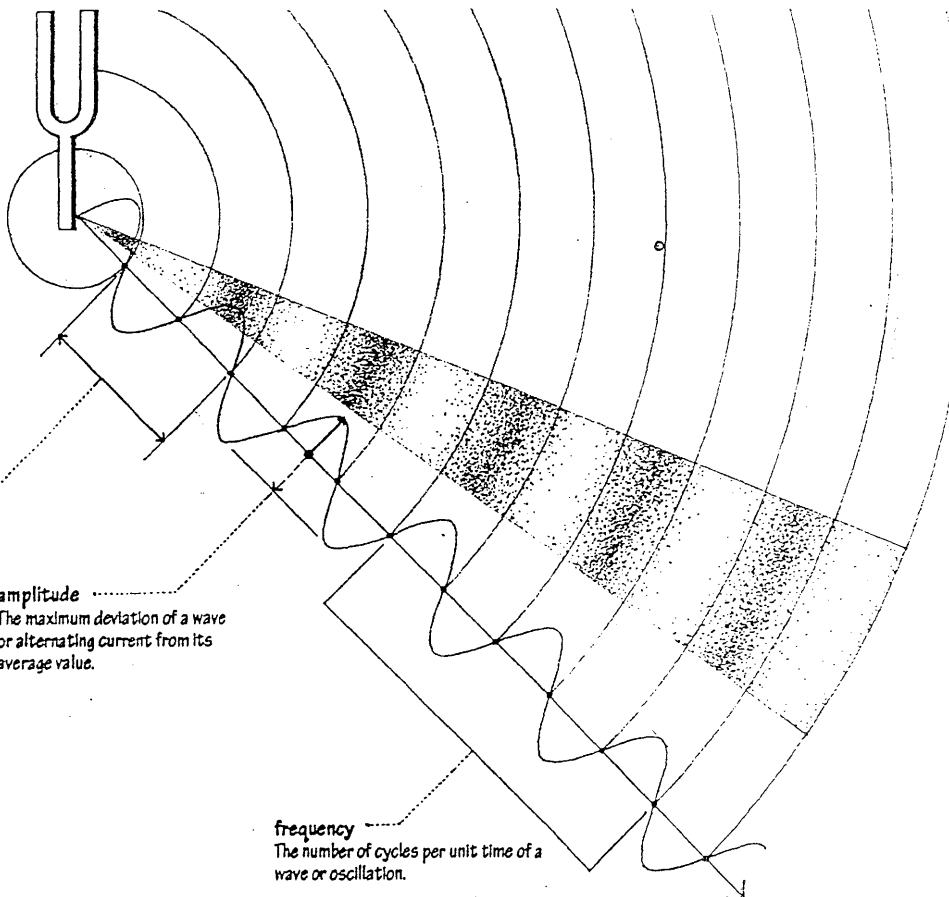
A range of wavelengths or frequencies between two defined limits.

## 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 4500 ft. (1.4 km) per second, through wood at approximately 11,700 ft. (3.6 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 increasing when the source and listener approach each other and decreasing 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.

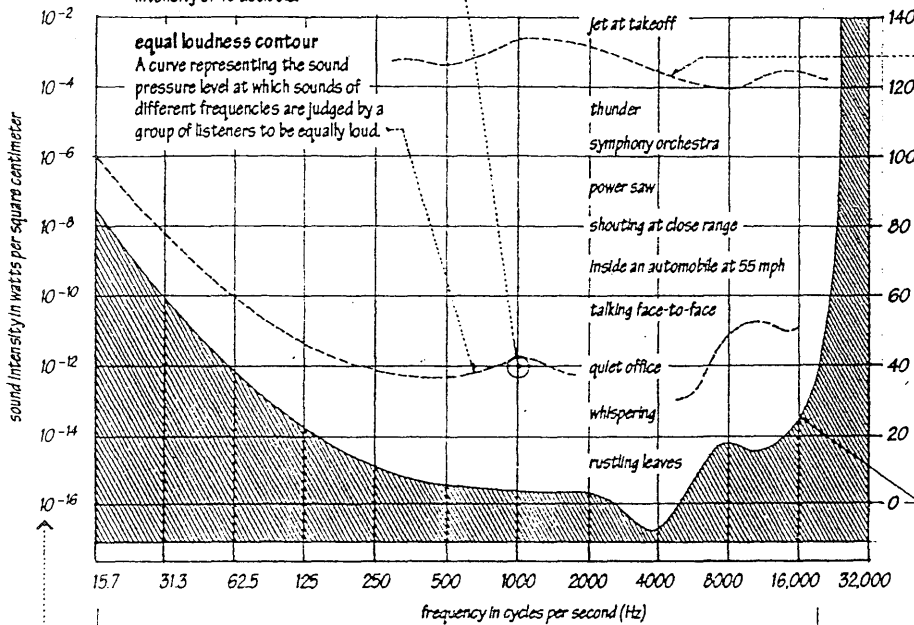
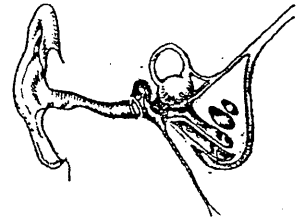
### decibel

A unit for expressing the relative pressure or intensity of sounds on a uniform scale from 0 for the least perceptible sound to about 130 for the average threshold of pain. Abbr.: dB

Decibel measurement is based on a logarithmic scale since increments of sound 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 = 63 dB, not 120 dB.

### hearing

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.



### equal loudness contour

A curve representing the sound pressure level at which sounds of different frequencies are judged by a group of listeners to be equally loud.

### jet at takeoff

### thunder

### symphony orchestra

### power saw

### shouting at close range

### inside an automobile at 55 mph

### talking face-to-face

### quiet office

### whispering

### rustling leaves

### threshold of pain

The level of sound intensity high enough to produce the sensation of pain in the human ear, usually around 130 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.

### audio frequency

A range of frequencies from 15 Hz to 20,000 Hz audible to the normal human ear.

### sound intensity

The rate at which acoustic energy flows through a medium, expressed in watts per square meter.

### sound intensity level

Sound intensity measured on the decibel scale, equal to 10 times the common logarithm of the ratio of the sound intensity to a reference intensity, usually  $10^{-12}$  watts per square meter ( $10^{-16}$  watts per square centimeter.)

### sound pressure

The difference between the actual pressure at any point in the field of a sound wave and the static pressure at that point, expressed in pascals.

### sound pressure level

Sound pressure measured on the decibel scale, equal to 10 times the common logarithm of the ratio of the sound pressure to a reference pressure, usually 20 micropascals.

### micropascal

One-millionth ( $10^{-6}$ ) part of a pascal. Symbol  $\mu\text{Pa}$

### 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.

### logarithm

The exponent indicating the power to which a base number must be raised to arrive at a given number.

### common logarithm

A logarithm having a base of 10.

### sound level 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.

# SOUND

## acoustics

The branch of physics that deals with the production, control, transmission, reception, and effects of sound.

## room acoustics

The qualities or characteristics of a room, auditorium, or concert hall that determine the audibility of speech or fidelity of musical sounds in it.

## sounding board

A structure over or behind and above a speaker or orchestra to reflect the sound toward the audience.

## reflecting surface

A nonabsorptive surface from which incident sound is reflected, used esp. to redirect sound in a space. To be effective, a reflecting surface should have a least dimension equal to or greater than the wavelength of the lowest frequency of the sound being reflected.

## acoustical cloud

One of a number of acoustic panels installed near the ceiling of a concert hall to reflect sound for improving the acoustic quality of music.

## acoustical analysis

A detailed study of the use of a building, the location and orientation of its spaces, possible sources of noise, and the desirable acoustical environment in each usable area.

## acoustical design

The planning, shaping, finishing, and furnishing of an enclosed space to establish the acoustical environment necessary for distinct hearing.

## acoustical treatment

The application of absorbent or reflecting materials to the walls, ceiling, and floor of an enclosed space to alter or improve its acoustic properties.

## diffracted sound

Airborne sound waves bent by diffraction around an obstacle in their path.

## reflected sound

The return of unabsorbed airborne sound after striking a surface, at an angle equal to the angle of incidence.

## airborne sound

Sound radiated directly into and transmitted through the air.

## live

Highly reverberant or resonant, as an auditorium or concert hall.

## dead

Without resonance, as a room free from echoes and reverberation.

## soundproof

Impervious to audible sound.

## resonance

The intensification and prolongation of sound produced by sympathetic vibration.

## sympathetic vibration

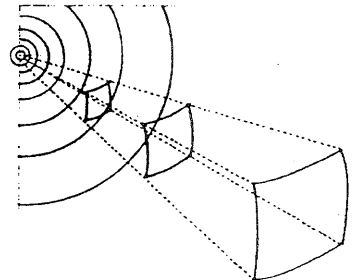
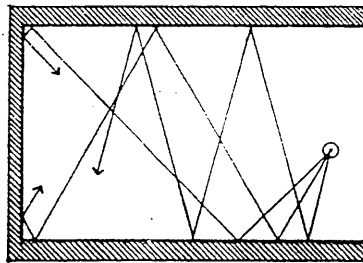
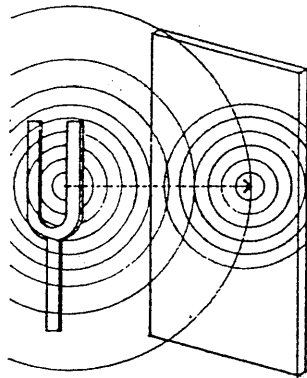
A vibration induced in one body by the vibrations of exactly the same period in a neighboring body.

## direct sound

Airborne sound traveling directly from a source to the listener. In a room, the human ear always hears direct sound before it hears reflected sound. As direct sound loses intensity, the importance of reflected sound increases.

## attenuation

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.



## echo

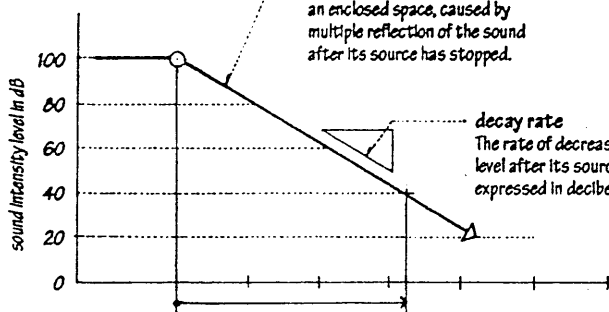
The repetition of a sound produced by the reflection of sound waves from an obstructing surface, loud enough and received late enough to be perceived as distinct from the source.

## flutter

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.

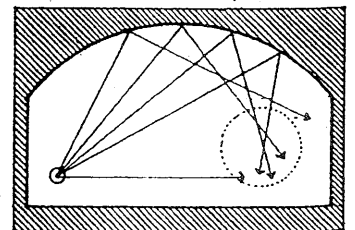
## reverberation

The persistence of a sound within an enclosed space, caused by multiple reflection of the sound after its source has stopped.



## reverberation time

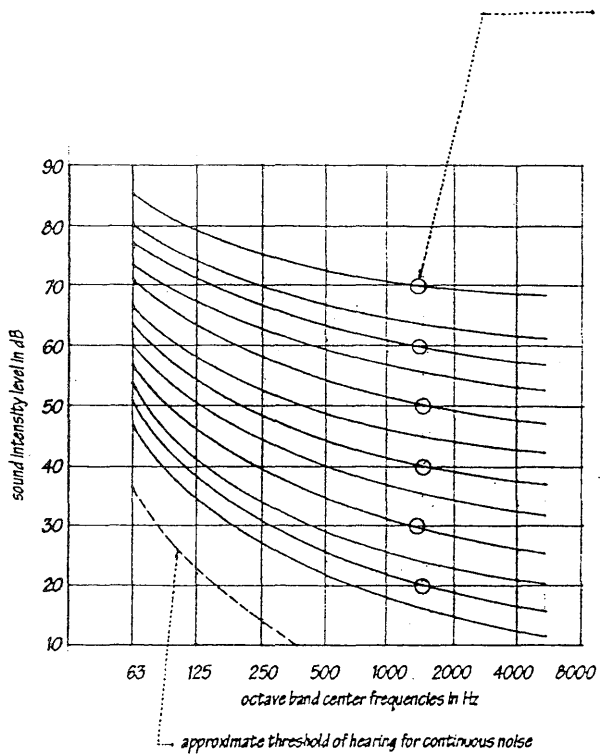
The time in seconds required for a sound made in an enclosed space to diminish by 60 decibels.



## focusing

The convergence of sound waves reflected from a concave surface.

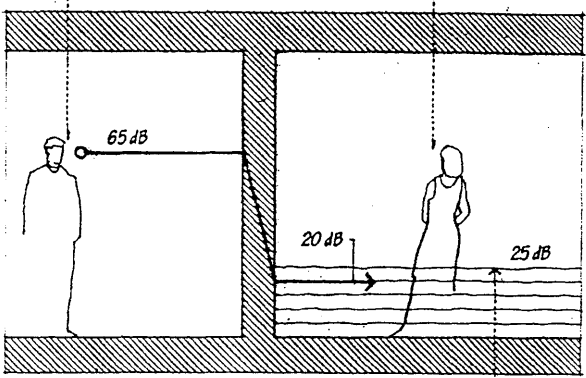




**noise criteria curve**  
One of a series of curves representing the sound pressure level across the frequency spectrum for background noise that should not be exceeded in various environments. Higher noise levels are permitted at the lower frequencies since the human ear is less sensitive to sounds in this frequency region. Also called NC curves.

**noise**  
Any sound that is unwanted, annoying, or discordant, or that interferes with one's hearing of something.

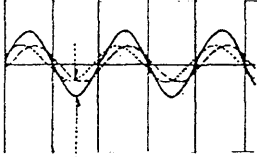
**noise reduction**  
The perceived difference in sound pressure levels between two enclosed spaces, due to the sound-isolating qualities of the separating barrier as well as the absorption present in the receiving room: expressed in decibels.



very noisy  
noisy  
moderately noisy  
quiet  
very quiet

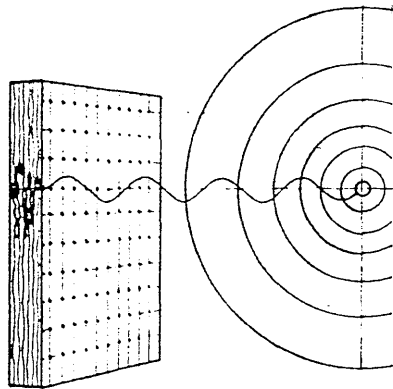
**background noise level**  
The level of ambient sound normally present in a space, above which speech, music, or other sounds must be presented to be heard.

**standing wave**  
A wave in which the amplitude of the resultant of a transmitted and a reflected wave is fixed in time and ranges from zero at the nodes to a maximum at the antinodes.



**white noise**  
An unvarying, unobtrusive sound having the same intensity for all frequencies of a given band, used to mask or obliterate unwanted sound. Also called white sound.

**interference**  
The phenomenon in which two or more light or sound waves of the same frequency combine to reinforce or cancel each other, the amplitude of the resulting wave being equal to the algebraic or vector sum of the amplitudes of the combining waves.



**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.

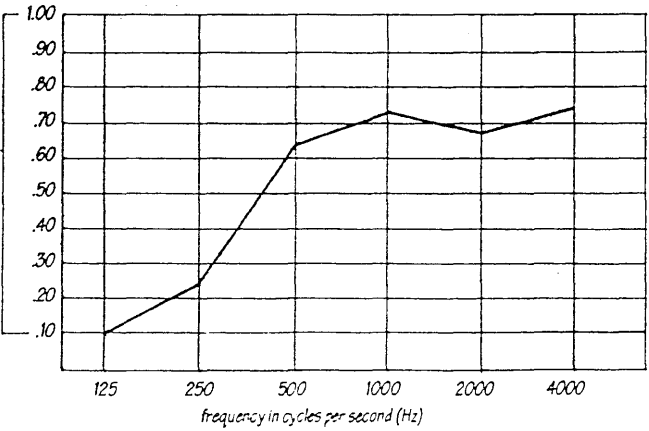
**absorption**  
The interception and conversion of sound energy into heat or other form of energy by the structure of a material, measured in sabins or absorption units.

**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.

**absorption coefficient**  
A measure of the efficiency of a material in absorbing sound at a specified frequency, equal to the fractional part of the incident sound energy at that frequency absorbed by the material.

**noise reduction coefficient**  
A measure of the sound-absorbing efficiency of a material, equal to the average of the absorption coefficients of the material, computed to the nearest 0.05 at four frequencies: 250, 500, 1000, and 2000 Hz.



# 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 insulation.

## 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. Abbr.: 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. Abbr.: STC

The higher the STC rating, the greater the sound-isolating value of the material or construction. An open doorway has an STC rating of 10; 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. Abbr.: IIC

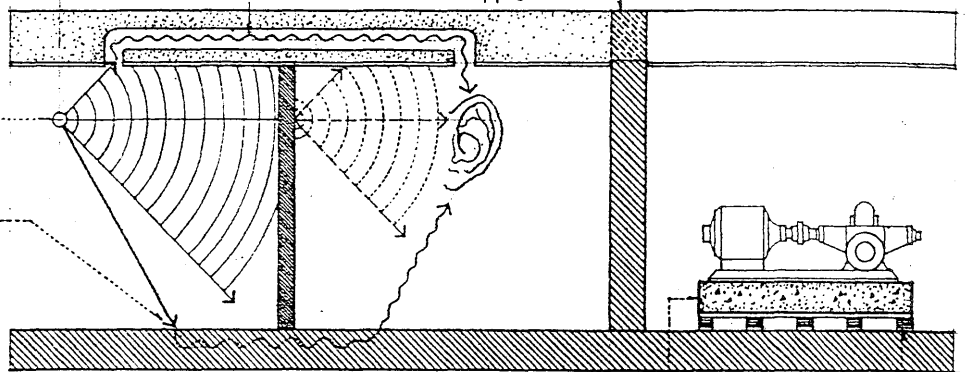
The higher the IC rating, the more effective is the construction in isolating impact noise. The IC rating replaces the previously used Impact Noise Rating (INR) and is approximately equal to the INR rating +51 dB for a given construction.

## 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

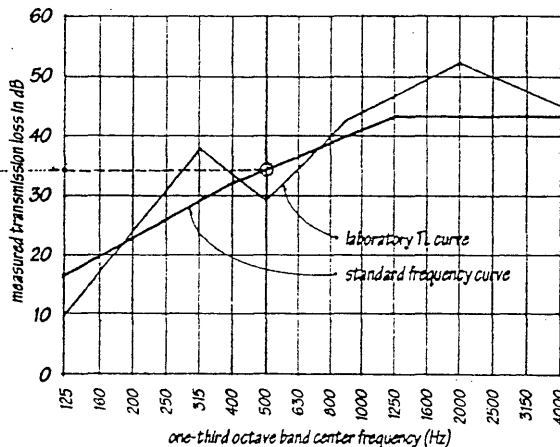
Resistance to the transmission of sound caused by the inertia and elasticity of the transmitting medium. In general, the heavier and more dense a body, the greater its resistance to sound transmission.

## 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 zigzag fashion and supporting opposite faces of the partition, sometimes with a fiberglass blanket between.

## resilient mounting

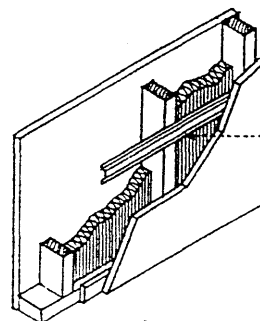
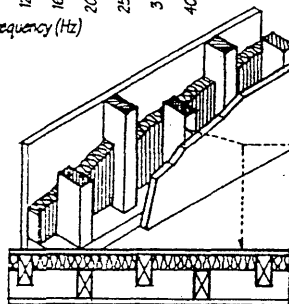
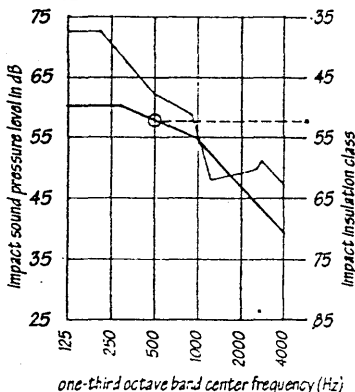
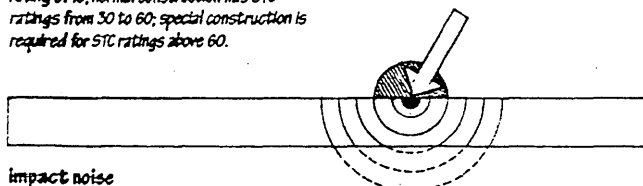
A system of flexible attachments or supports that permits room surfaces to vibrate normally without transmitting the vibratory motions and associated noise to the supporting structure.

## resilient channel

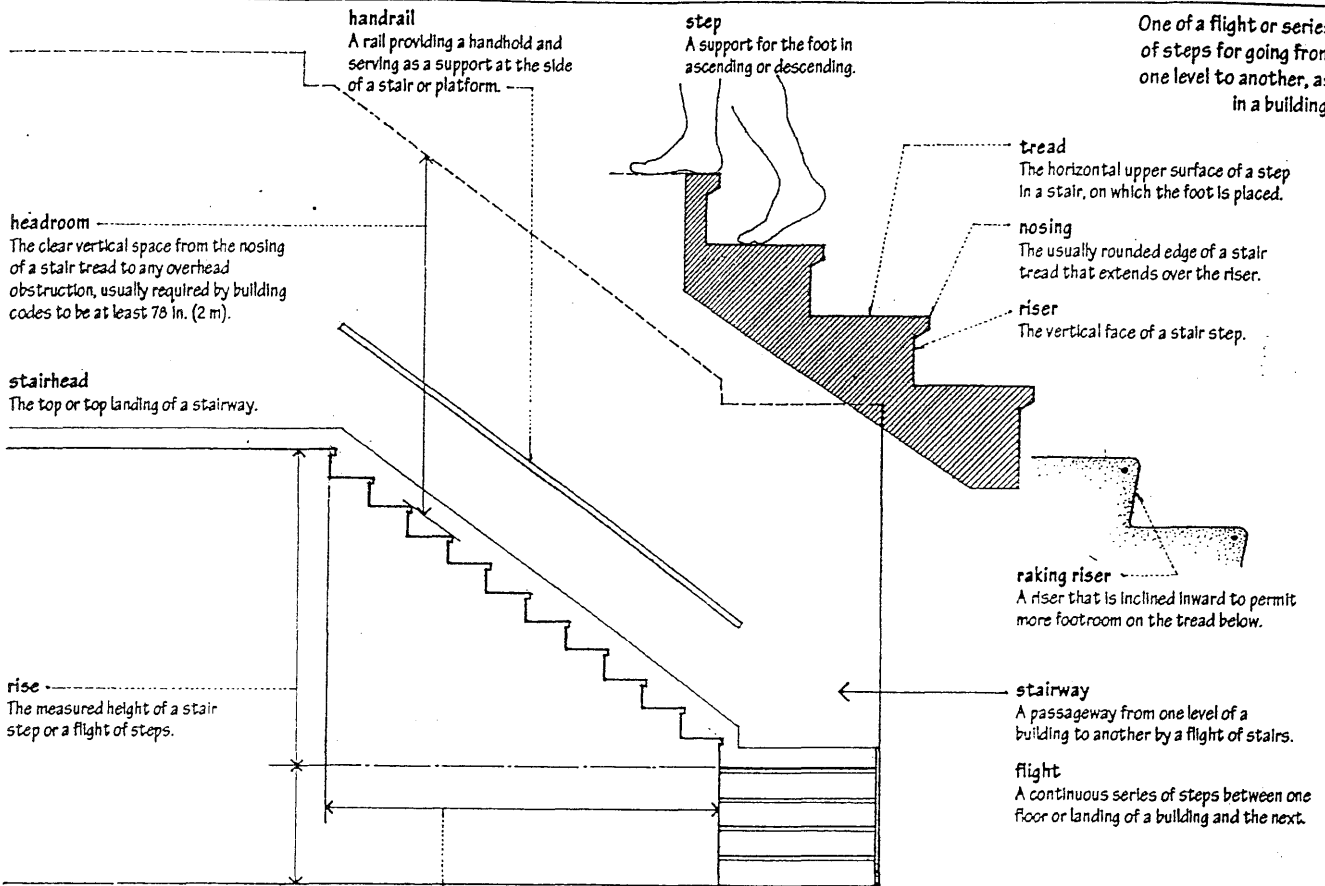
A metal channel for the resilient mounting of wallboard to studs or joists, used in sound-isolating construction to reduce the transmission of vibrations and noise.

## 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.



One of a flight or series of steps for going from one level to another, as in a building.



**stairwell**  
A vertical shaft or opening containing a stairway.

**ladder**  
A structure of wood, metal, or rope, usually consisting of two sidepieces joined at suitable intervals by bars or rungs, forming a means of climbing up or down at an angle of pitch between 75° and 90°.

**rung**  
One of the crosspieces, usually rounded, forming the steps of a ladder.

**ship's ladder**  
A fixed stepladder having an angle of pitch between 55° and 70°, usually equipped with handrails.

**critical angle**  
The angle of pitch above which a stair is considered to be uncomfortable or unsafe, usually 50°.

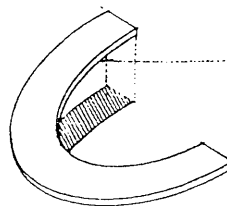
**riser:tread ratio**  
The preferred ratio between the riser and tread of a stairstep, specified by either of two formulas:  
 $R + 2T = 24 \text{ to } 25$ ;  
 $R \times T = 72 \text{ to } 75$ .

**preferred angle**  
For a flight of stairs, any angle of pitch between 28° and 36°; or, for a ramp, an angle of pitch less than 5°.

**ramp**  
A sloping floor, walk, or roadway connecting two levels.

**stepped ramp**  
A series of ramps connected by steps.

**helicline**  
A curved ramp.



# STAIR

## straight-run stair

A stair extending from one level to another without turns or winders.

## flier

One of the steps in a straight flight of stairs.

## 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.

## 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.

## dog-leg stair

A half-return stair consisting of two straight flights immediately side by side and connected by an intervening landing.

## double-L stair

A half-turn stair having two intermediate landings, each offering a 90° change of direction.

## three-quarter-turn stair

A stair requiring a three-quarter turn for continued ascent or descent.

## winding stair

Any stair constructed chiefly with winders, as a geometrical or spiral stair.

## circular stair

A winding stair having a circular plan.

## spiral stair

A circular stair having wedge-shaped treads winding around and supported by a central post.

## newel

A central post from which the winders of a spiral stair radiate.

## straight flight

A flight of stairs having no turns or winders.

## landing

A platform between flights of stairs or the floor at the foot or head of a flight of stairs.

## quarterspace landing

A square landing connecting two flights of a stair. Also, quarterspace landing.

## walking line

A line 18 in. (457 mm) in from the centerline of a handrail, along which the run of a winder is the same as a flier. Also called line of travel.

## halfspace landing

A landing connecting two flights of a half-turn stair. Also, halfspace landing.

## winder

A more or less wedge-shaped stair step for changing direction.

## kite winder

The central of three stair winders making a 90° turn.

## balanced step

Any of a series of winders so arranged that they are nearly as wide at the inside of the stair as the adjacent fliers. Also called dancing step, dancing winder.

## elliptical stair

A winding stair having an elliptically shaped well.

## geometrical stair

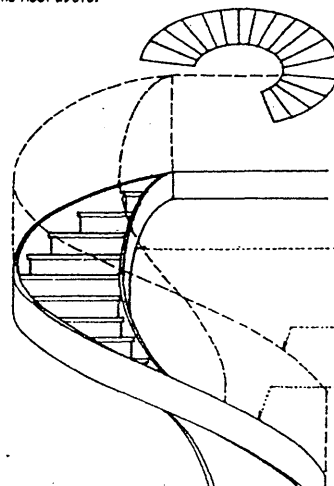
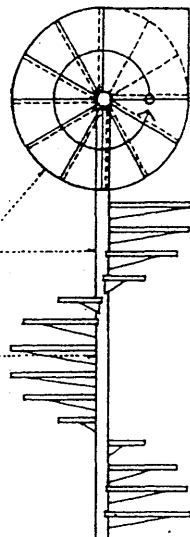
A winding stair constructed around a circular or elliptical well without the use of newels and often no landings between floors.

## wreath

A curved section of handrail.

## wreath piece

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 receiving 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 absorbing the thrust of an inclined member, 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, nonslip 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.

**hanging step**  
A step projecting from a wall with no real or apparent support at its outer end. Also called cantilevered step.

**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 rod**  
A metal rod for holding a stair carpet in place against the bottom of a riser.

**staircase**  
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 string.

**bracket**  
An ornamental piece filling the angle between a riser and the overhanging edge of its tread.

**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.

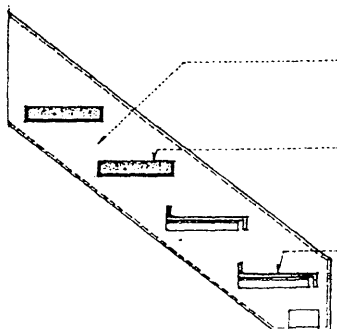
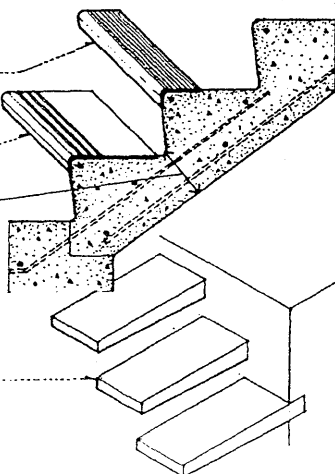
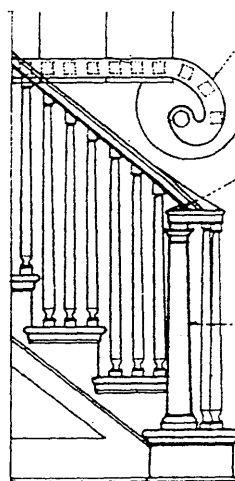
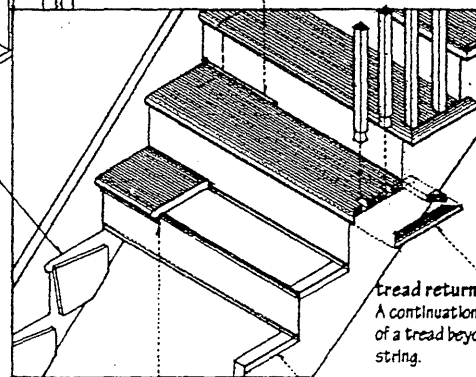
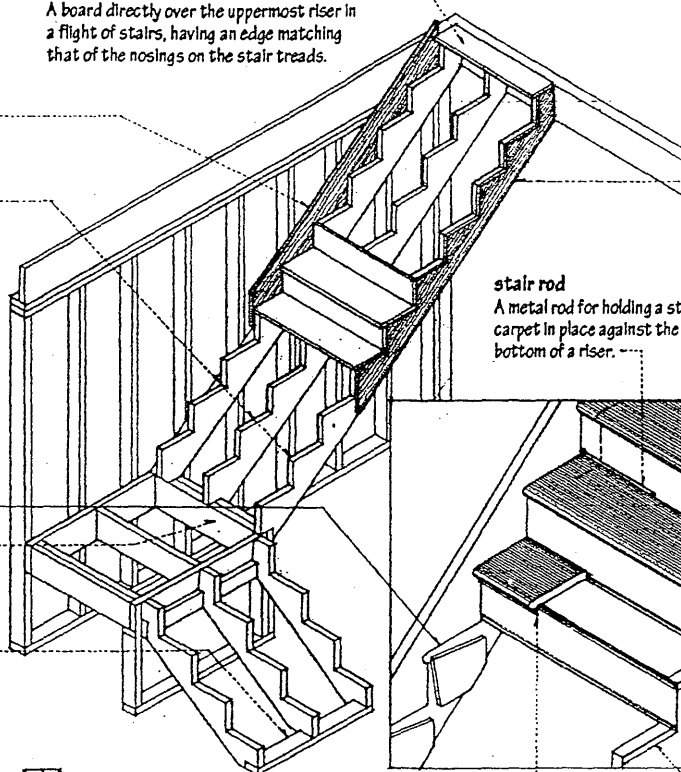
**newel**  
A post supporting one end of a handrail at the top or bottom of a flight of stairs. Also called newel post.

**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 nonslip surface.

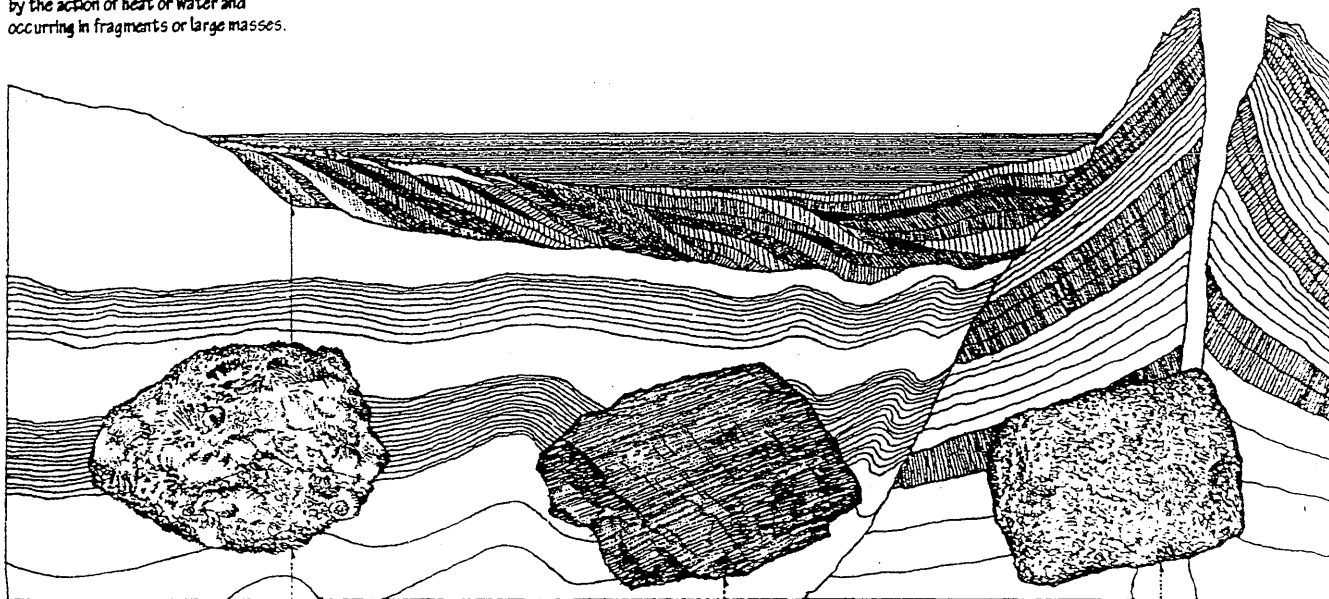


# STONE

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.

## 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.

## igneous rock

A class of rock formed by the crystallization of molten magma, as granite.

## 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.

## travertine

A variety of limestone deposited by spring waters, esp. hot springs, sold as marble in the building trade.

## dolomite

A limestone rich in magnesium carbonate.

## oolite

A limestone composed of small, round, calcareous grains resembling fish roe. Also called egg 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 massive, soft rock containing a high proportion of talc, used as dimension stone for hearths, table tops, and carved ornaments. Also called steatite.



## 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 account for the distinctive variegated appearance that many marbles have. The commercial term includes many dense limestones and some coarse-grained dolomites.

## verd 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.



## granite

A very hard, coarse-grained igneous rock composed mainly of quartz, feldspar, and mica or other colored minerals.

## obsidian

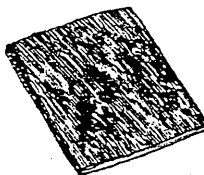
A volcanic glass similar in composition to granite, usually black with a bright luster, and transparent in thin pieces.

## 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.



**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.

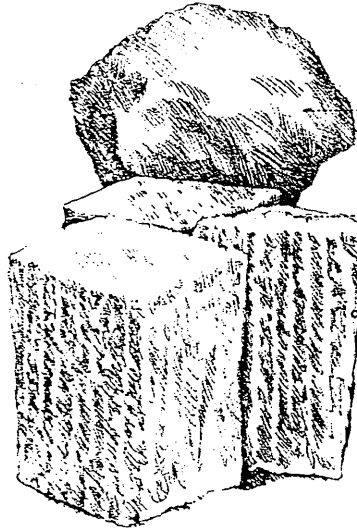
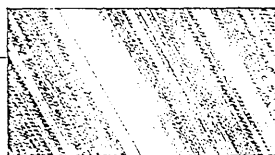
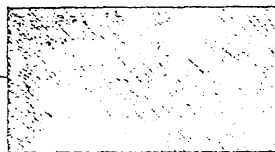
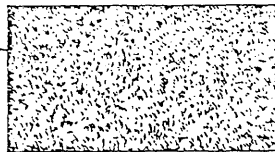
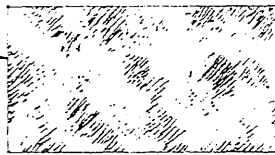
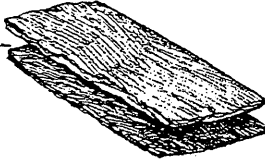
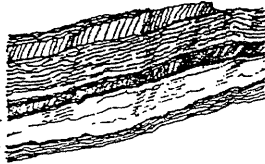
**chat-sawn**  
Noting a coarse, pebbled stone finish produced by using a slurry of a loose abrasive and water in the sawing process.

**shot-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 split 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 stonecutter in leveling the surfaces.

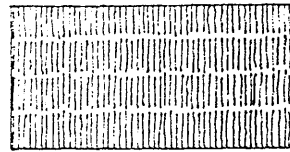
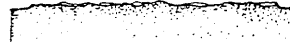
**drafted margin**  
A smooth, uniform margin worked around a stone face.

**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.

**boasted surface**  
A stone finish obtained by chiselling roughly parallel grooves across the face.

**batted 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.

## bulk-active structure

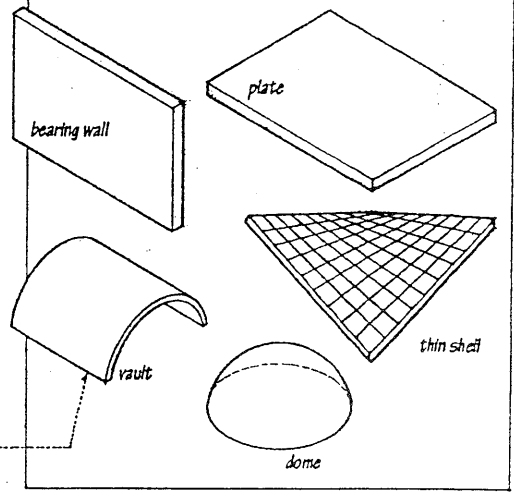
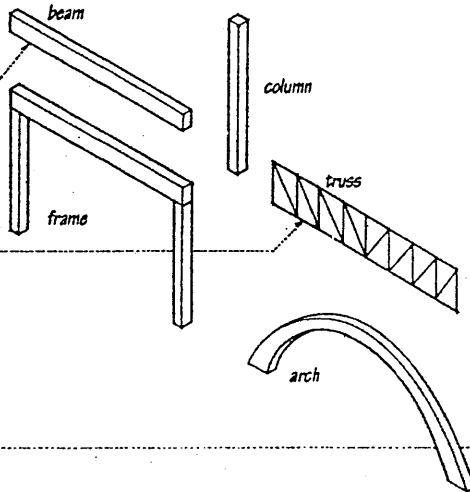
A structure or structural member that redirects external forces primarily through the bulk and continuity of its material, as a beam or column.

## 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 along the continuity of a surface, as a plate or shell.

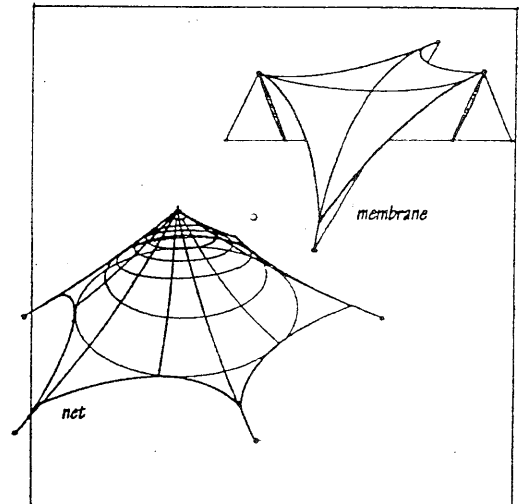
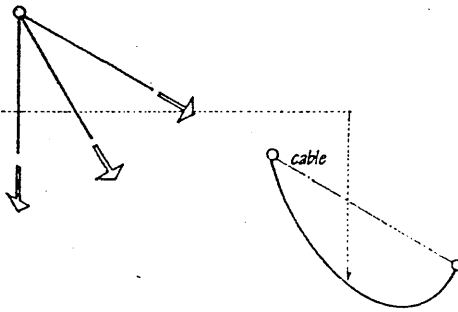


## flexible

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 structure or structural member that redirects external forces primarily through the form of its material, as an arch or cable.

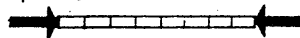


## structural member

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.

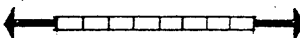


## strut

A structural member designed primarily to resist longitudinal compression.

## tension member

A structural member subject primarily to tensile forces.

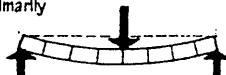


## tie

A tension member designed to keep two structural members from spreading or separating.

## bending member

A structural member subject primarily to transverse forces.

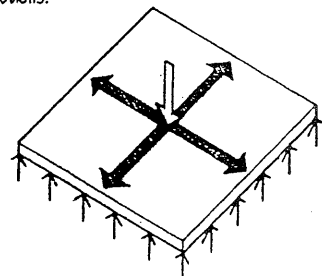
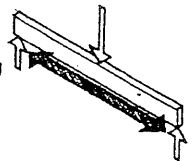


## one-way

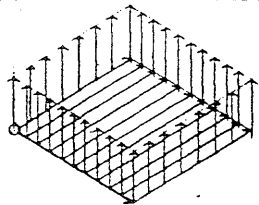
Of or pertaining to a structure or structural member having a load-carrying mechanism that acts in one direction only.

## two-way

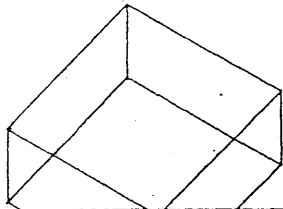
Of or pertaining to a structure or structural member having a load-carrying mechanism that acts in two or more directions.



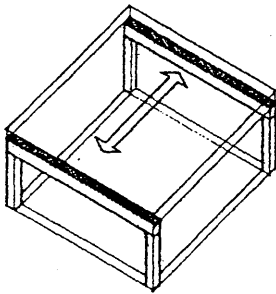




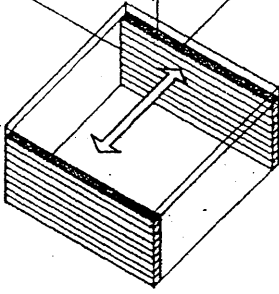
**structural unit**  
A discrete structure or assembly of structural members forming a spatial volume.



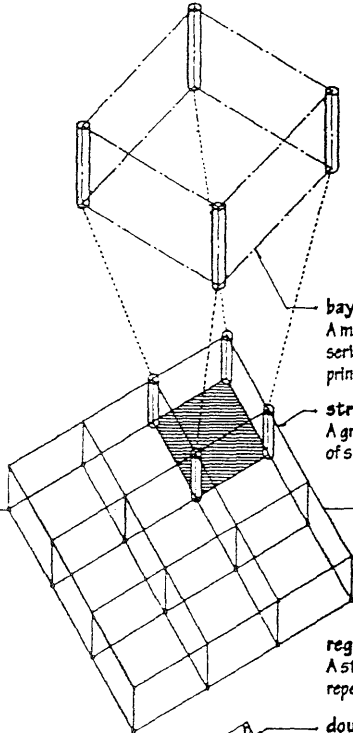
**bay**  
A major spatial division, usually one of a series, marked or partitioned off by the principal vertical supports of a structure.



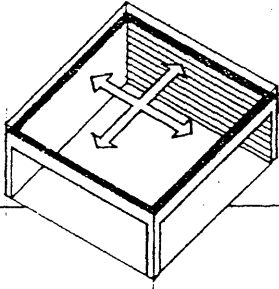
**structural grid**  
A grid defining the principal points or lines of support for a structural system.



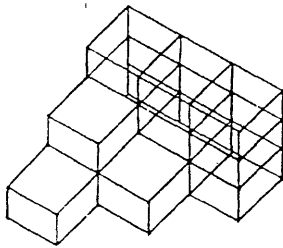
**regular grid**  
A structural grid having regularly repeating bays in two directions.



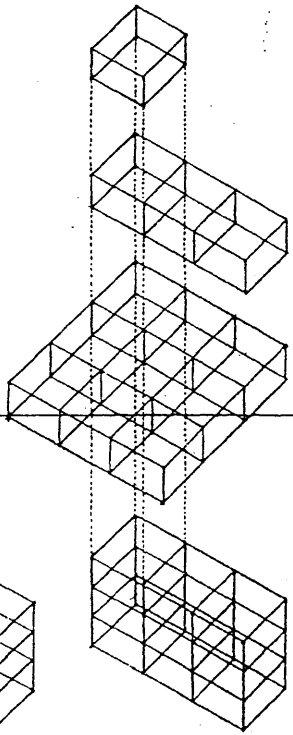
**double grid**  
A structural pattern consisting of two grids offset from each other and creating interstitial spaces between the bays.



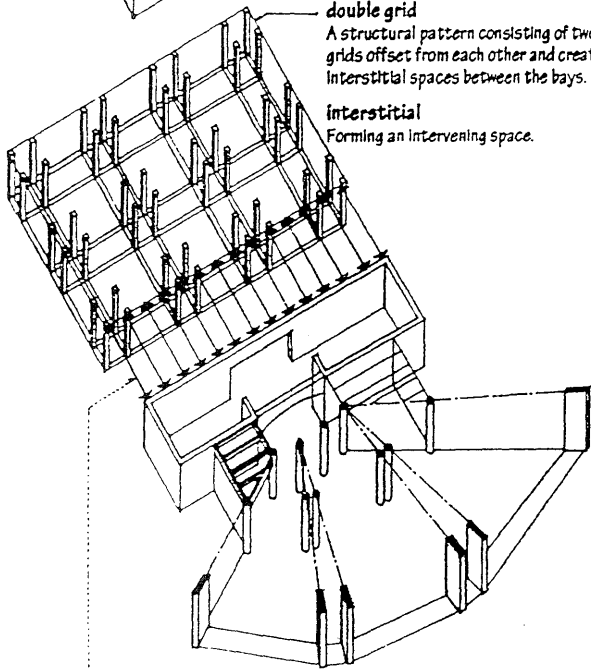
**interstitial**  
Forming an intervening space.



**slipped grid**  
A structural grid having points or lines of supports spaced uniformly in one direction but varying in the other.

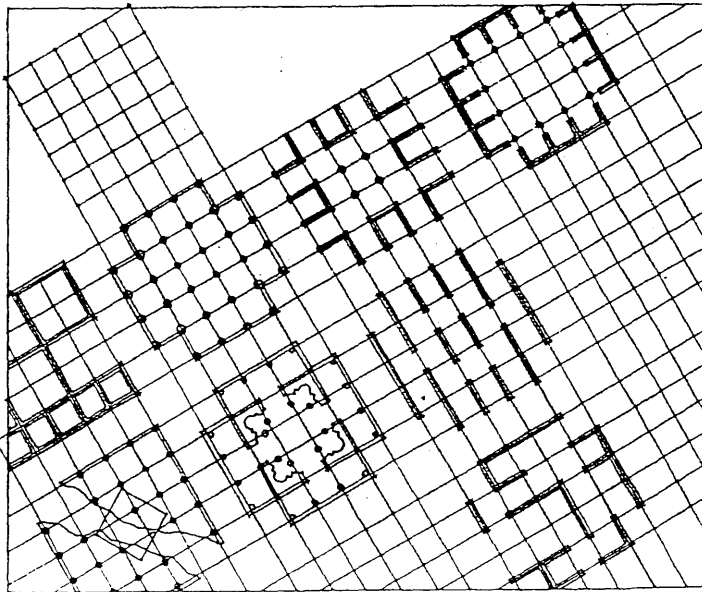


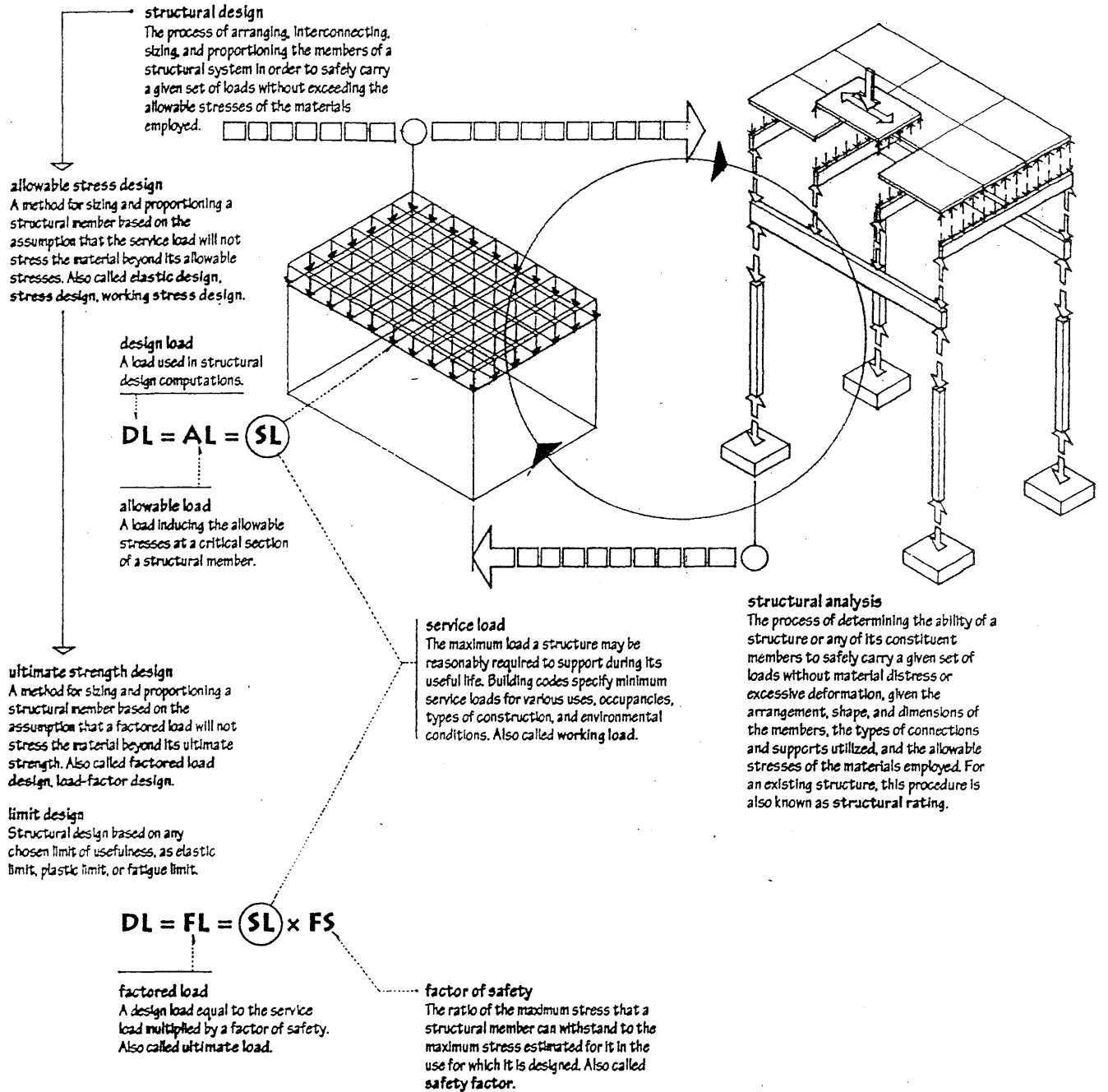
**structural pattern**  
The arrangement of principal vertical supports for a structure, which influences the selection of an appropriate spanning system and establishes the possibilities for the ordering of spaces and functions.



**transition structure**  
A structure mediating between two or more different structural patterns.

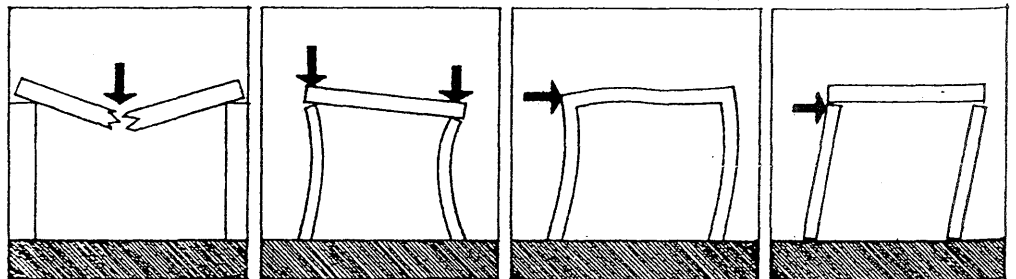
**irregular grid**  
A structural grid having irregularly shaped bays in one or more directions.

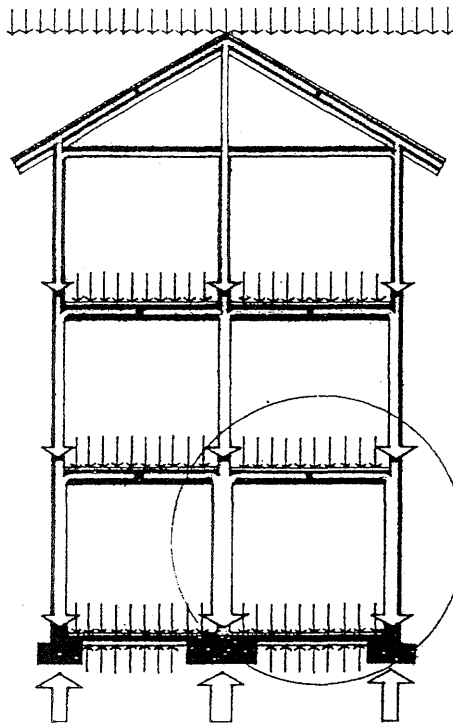




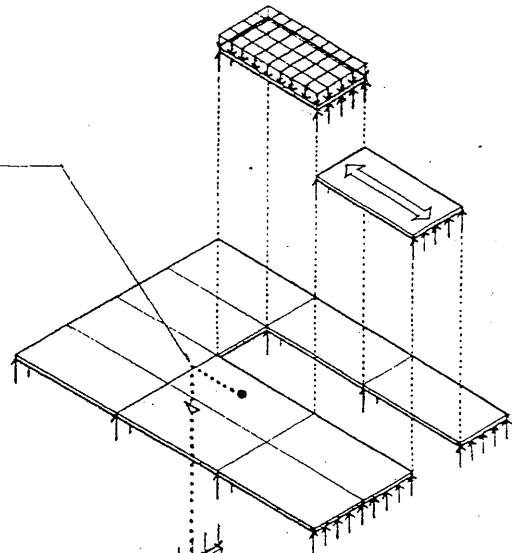
## structural failure

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.

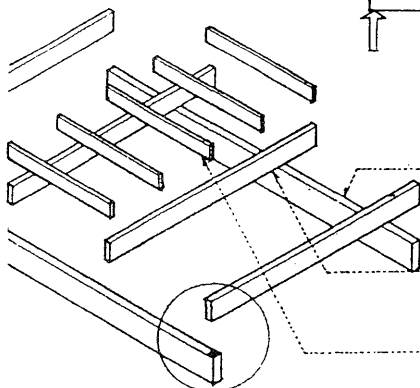


**tributary area**  
The portion of a structure contributing to the load on a structural element or member. Also called contributory area.

**tributary**  
Channeling into something more inclusive.

**tributary load**  
The load on a structural element or member collected from its tributary area.

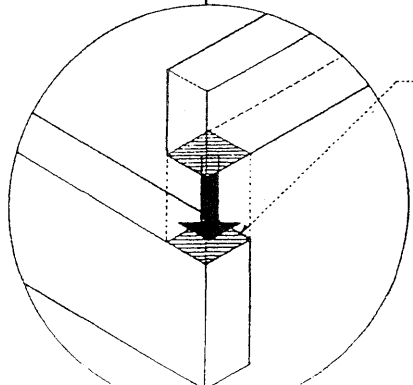
**load strip**  
The tributary area per unit length of a supporting structural member.



**primary member**  
A structural member essential to the stability of a structural whole. Also called main member.

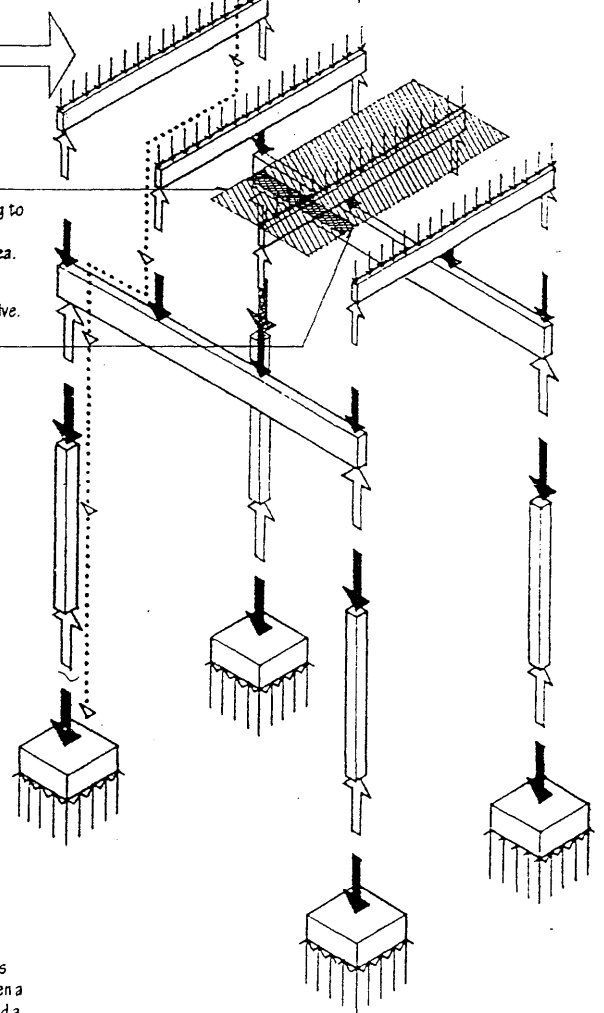
**secondary member**  
Any structural member supported by a primary member.

**tertiary member**  
Any structural member supported by a secondary member.



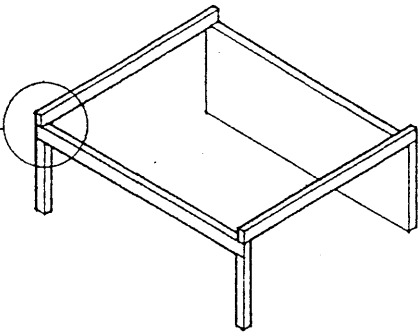
**bearing**  
A point, surface, or mass that supports weight, esp. the area of contact between a bearing member, as a beam or truss, and a column, wall, or other underlying support.

**bearing stress**  
The stress developed between a bearing member and an underlying support, equal to the quotient of the magnitude of the forces transmitted and the area of contact between the two elements.

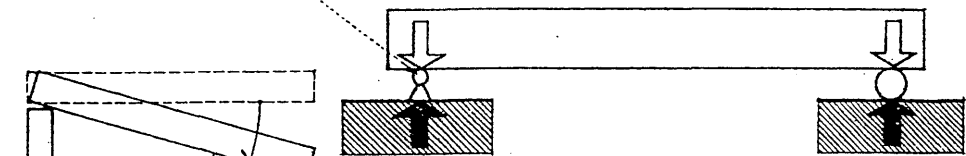


STRUCTURE

**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.

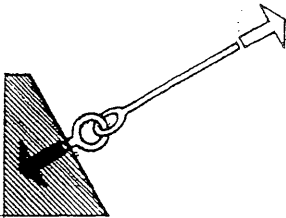


**point of support**  
A point on a structural member at which its reaction to a load is transmitted as a force to a supporting member.

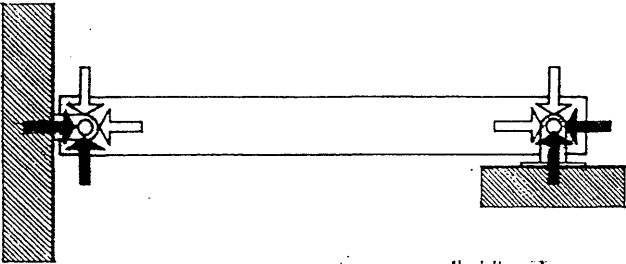
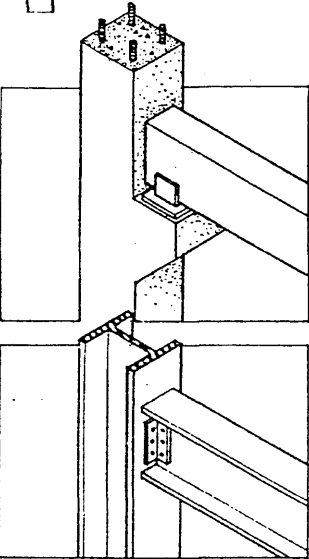


**unrestrained member**  
A structural member permitted to rotate freely about a point of support.

**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.

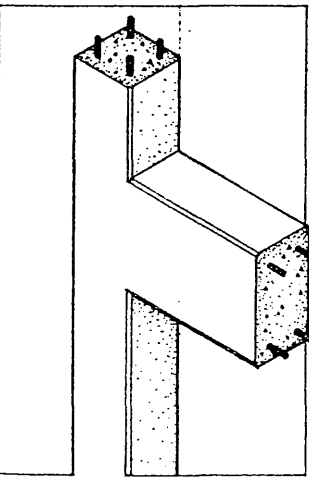
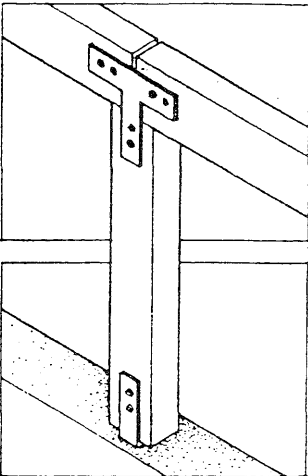
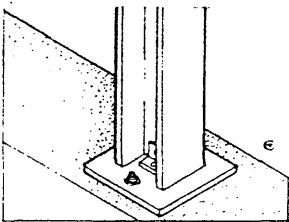


**cable support**  
A cable anchorage that allows rotation but resists translation only in the direction of the cable.

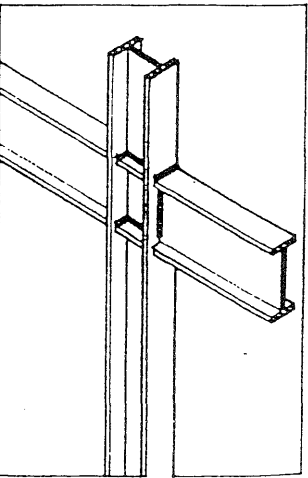
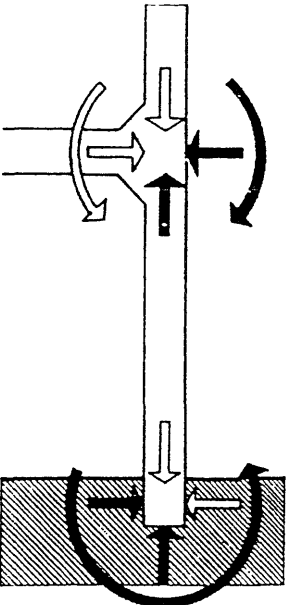


**pin joint**  
A structural connection that allows rotation but resists translation in any direction. Also called hinge joint, pinned connection.

**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.

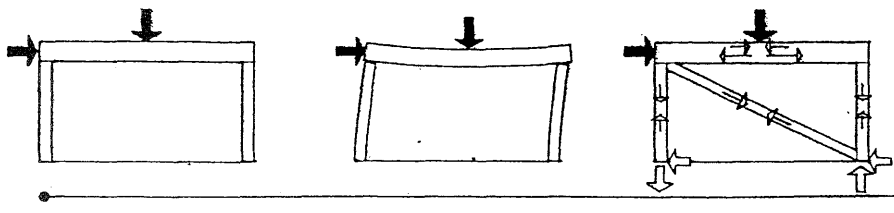


**rigid joint**  
A structural connection that maintains the angular relationship between the joined elements, restrains rotation and translation in any direction, and provides both force and moment resistance. Also called fixed connection, fixed joint, rigid connection.



**fixed-end connection**  
A rigid joint connecting the end of a structural member to a support.

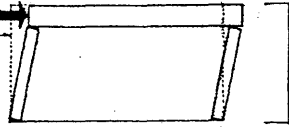
**anchorage**  
A means for binding a structural member to another or to its foundation, often to resist uplifting and horizontal forces.



**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.

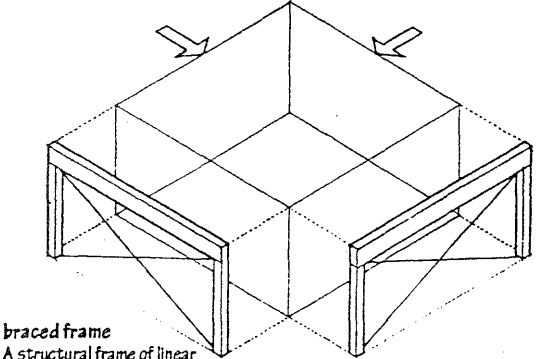
**lateral stability**  
The ability of a structure to resist lateral forces without sliding, overturning, buckling, or collapsing.

**racking**  
The straining and distortion of a structural frame by lateral forces.

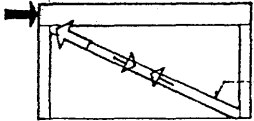


**collapse mechanism**  
An unstable configuration of structural members susceptible to falling or breaking down under an applied load without a change in length of any individual member.

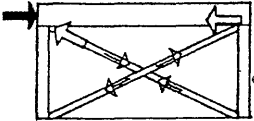
**lateral bracing**  
Stabilizing a structural system against lateral forces by means of diagonal or cross bracing.



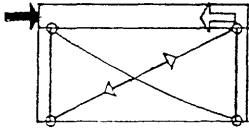
**braced frame**  
A structural frame of linear members made rigid by a system of diagonal members.



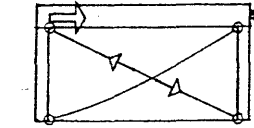
**brace**  
A structural element for positioning, supporting, strengthening, or restraining the members of a structural frame.



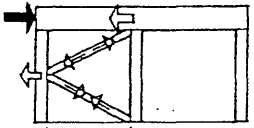
**diagonal bracing**  
A system of inclined members for bracing the angles between the members of a structural frame and ensuring the lateral stability of the whole.



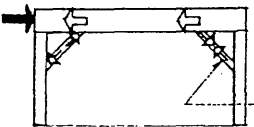
**sway brace**  
A diagonal member for bracing a structure against lateral forces.



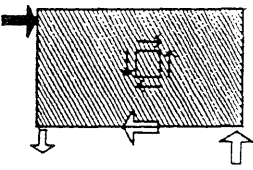
**cross bracing**  
A pair of transverse braces for stabilizing a structural frame against lateral forces. When using cables, two are necessary to stabilize the structure against lateral forces from either direction. For each direction, one cable will operate effectively in tension while the other would 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.



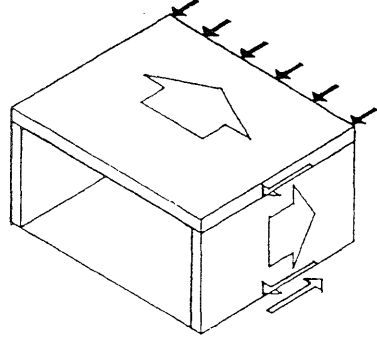
**K-brace**  
A pair of diagonal braces for stabilizing a structural frame against lateral forces, meeting at some point along the length of a member of the frame.



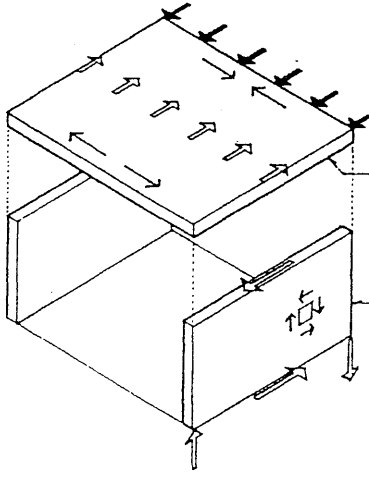
**knee brace**  
A diagonal member for bracing the angle between two joined members, being joined to each partway along its length.



**diaphragm**  
A relatively thin, rigid structural member capable of withstanding shear when loaded in a direction parallel to its plane.



**horizontal diaphragm**  
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.

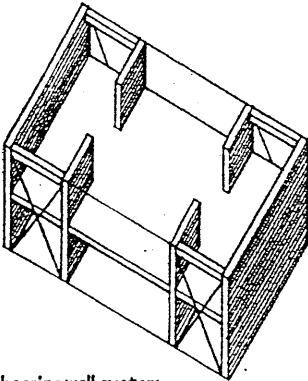


**shear wall**  
A vertical diaphragm acting as a thin, deep cantilever beam in transferring lateral loads to the ground foundation.

STRUCTURE

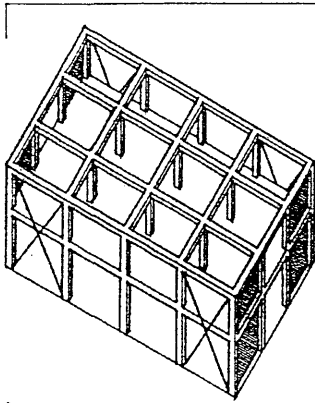
regular structure

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.



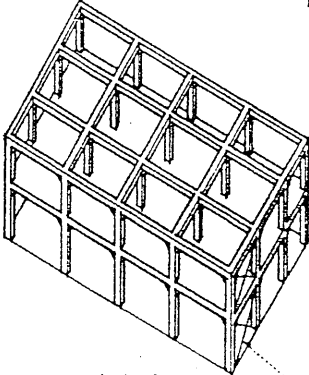
bearing wall system

A structural system consisting of vertical planar elements for supporting gravity loads and shear walls or braced frames for resisting lateral forces.



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.

eccentric bracing

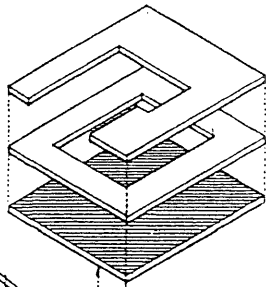
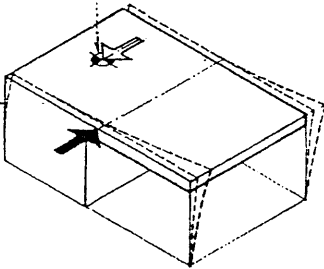
A structural system for resisting lateral forces, combining the ductility of a moment-resisting frame with the rigidity of a braced frame.

irregular structure

A structural system characterized by any of various plan or vertical irregularities, as a soft or weak story, a discontinuous shear wall or diaphragm, or the asymmetrical layout of mass or lateral force resisting elements. Irregular structures generally require dynamic analysis in order to determine the torsional effects of lateral forces.

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.

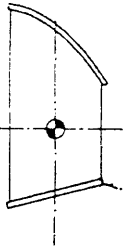


discontinuous diaphragm

A horizontal diaphragm having a large cutout or open area, or a stiffness significantly less than that of the story above or below.

torsional irregularity

The asymmetrical layout of mass or lateral force-resisting elements, resulting in noncoincident centers of mass and resistance and causing the story drift at one end of the structure to be more than the average of the story drifts at both ends.

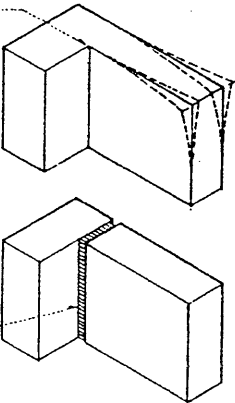


nonparallel system

A structural system having lateral force-resisting elements neither parallel nor symmetrical about the major orthogonal axes of the system.

reentrant corner

The plan configuration of a structure and its lateral force-resisting system having projections beyond a corner significantly greater than the plan dimension 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.



seismic joint

A joint that physically separates two adjacent building masses so that free vibratory movement in each can occur independently of the other.

soft story

A story having a lateral stiffness significantly less than that of the stories above.

weak story

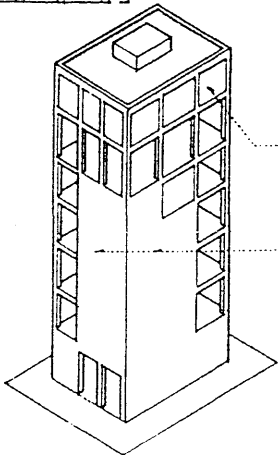
A story having lateral strength significantly less than that of the stories above.

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.



## 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 winds.

## turbulence

Irregular motion of the atmosphere characterized by up-and-down currents.

## tube structure

A high-rise structure having perimeter lateral force-resisting systems internally braced by rigid floor diaphragms. A tube structure acts as a cantilevered box beam in resisting lateral forces.

## damp

To cause a decrease in amplitude of successive oscillations or waves.

## damping mechanism

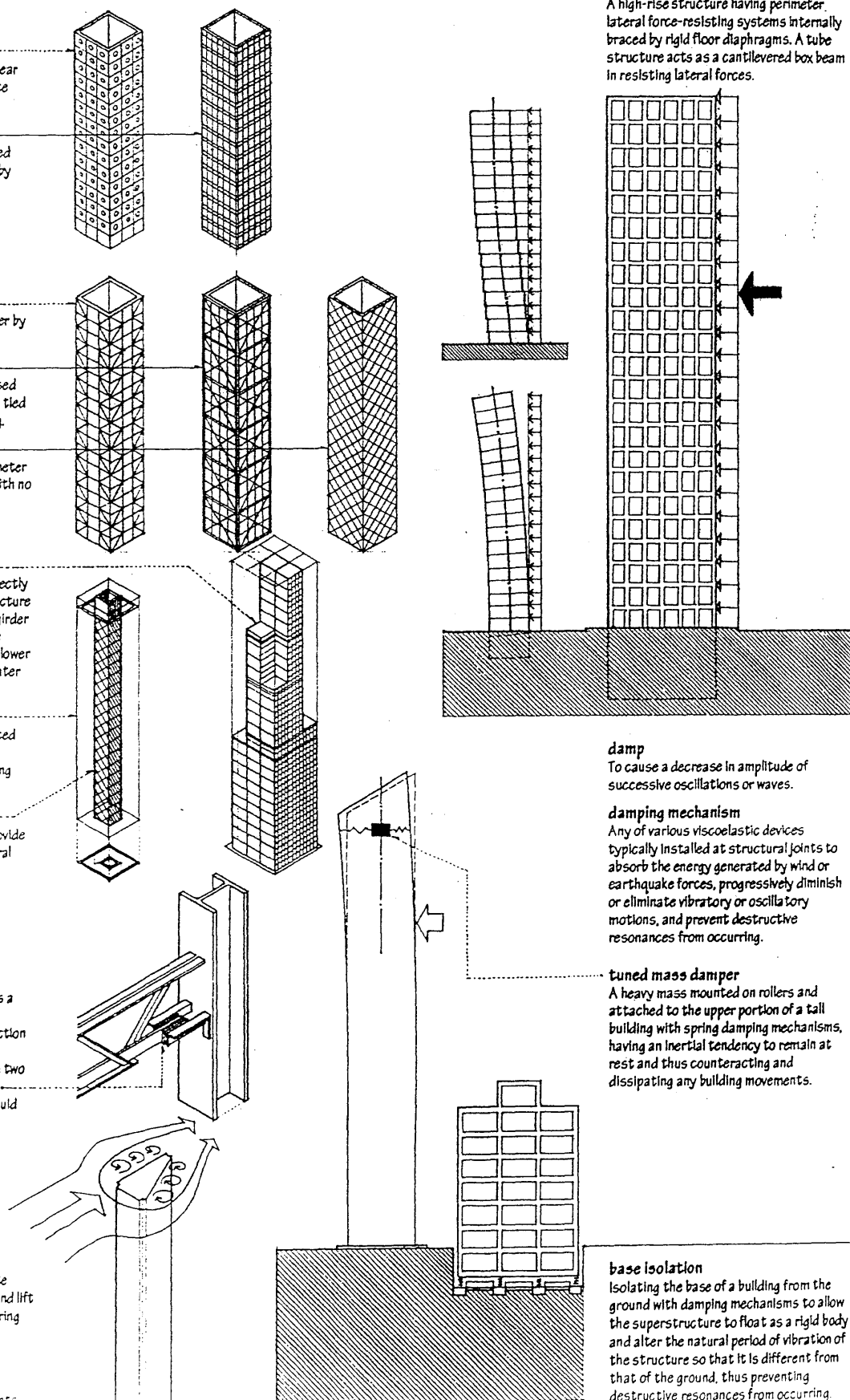
Any of various viscoelastic devices typically installed at structural joints to absorb the energy generated by wind or earthquake forces, progressively diminish or eliminate vibratory or oscillatory motions, and prevent destructive resonances from occurring.

## tuned mass damper

A heavy mass mounted on rollers and attached to the upper portion of a tall building with spring damping mechanisms, having an inertial tendency to remain at rest and thus counteracting and dissipating any building movements.

## base isolation

Isolating the base of a building from the ground with damping mechanisms to allow the superstructure to float as a rigid body and alter the natural period of vibration of the structure so that it is different from that of the ground, thus preventing destructive resonances from occurring.



# 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.

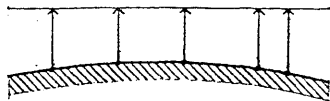
**magnetic north**  
North as indicated by the north-seeking pole of the magnetic needle in a compass.

**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.

**traverse**  
A sequence of intersecting surveyed lines whose lengths and angles of intersection are recorded graphically on a map and as data in a table.

**place of beginning**  
The starting point for a metes-and-bounds survey.



**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.

**butts and bounds**  
A legal term for the boundary lines of a parcel of land as used in deeds and titles.

**plat**  
A plan or map of land in a city, town, section, or subdivision, indicating the location and boundaries of individual properties.

**survey plat**  
A legal document describing the location, boundaries, and dimensions of a tract or parcel of land, including zoning and planning commission approvals, easements and restrictions, and, for a subdivision, the dividing lines of streets, blocks, and lots, and the numbering and dimensions of each lot.

**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.

**metes and bounds**  
The property lines or boundaries of a parcel of line.

**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.

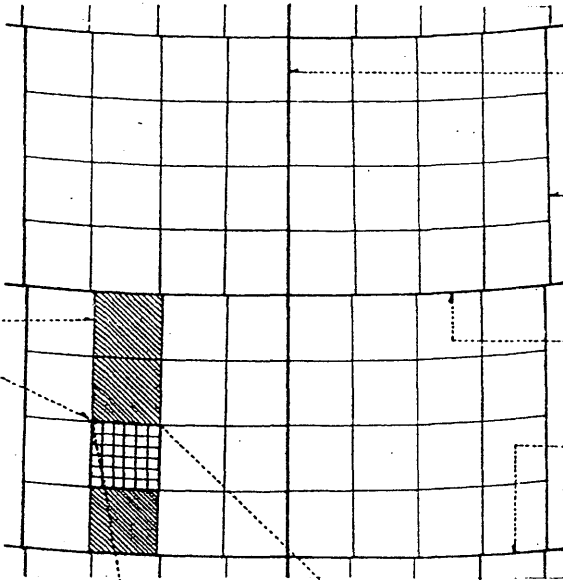
**course**  
The compass direction from one reference point to the next for each leg of a metes-and-bounds survey, stated in degrees, minutes, and seconds as an angular deviation east or west of due north or south.

**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 36 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.



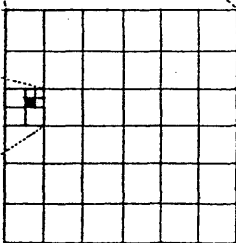
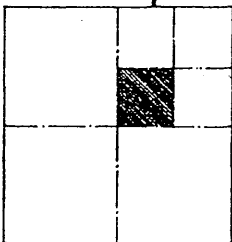
**principal meridian**  
In the rectangular system of survey, a north-south reference line established at a substantial landmark for a large area of land.

**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.

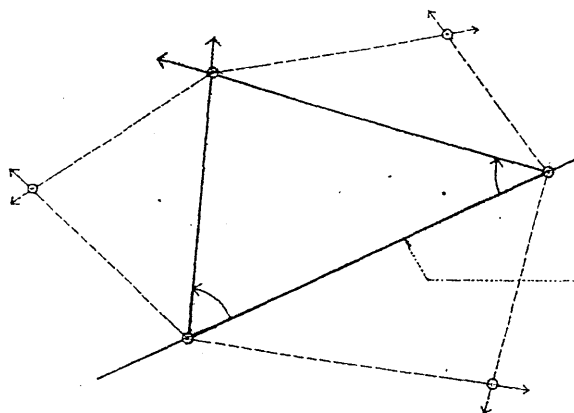
**baseline**  
The principal east-west reference line for an area in the rectangular system of survey.

**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.

**triangulation**

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**

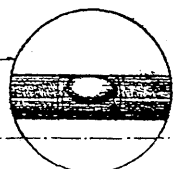
A line of known length and position from which points or other lines may be established, as a corner of a building structure or a property line.

**level**

A device for determining true horizontal or vertical directions by the centering of a bubble in a slightly bowed glass tube filled with alcohol or ether. Also called spirit level.

**artificial horizon**

A level, as a surface of mercury.



**stadia**

A method of surveying in which distances are read by noting the interval on a graduated rod intercepted by two horizontal cross hairs mounted in the telescope of a surveying instrument.

**target**

A red and white disk on a leveling rod that facilitates the sighting and reading of the rod.

**rod**

A straight pole or bar, conspicuously marked with graduations, and used in measuring the vertical distance between a point on the ground and the line of sight of a surveyor's level. Also called leveling rod, stadia rod.

**chain**

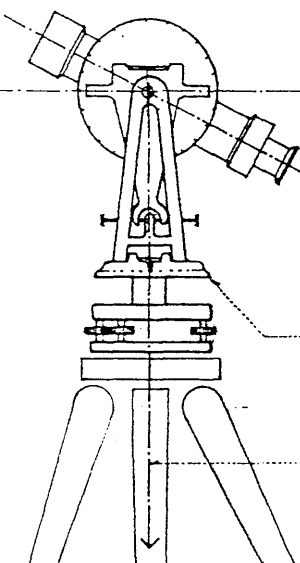
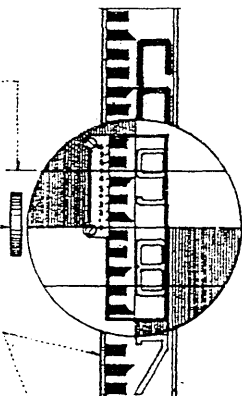
A distance-measuring device consisting of 100 metal links of equal length.

**Gunter's chain**

A distance-measuring device consisting of 100 metal links and a total length of 66 ft. (20 m). Also called surveyor's chain.

**engineer's chain**

A distance-measuring device consisting of 100 metal links and a total length of 100 ft. (30 m).



**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.

**leveling**

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**

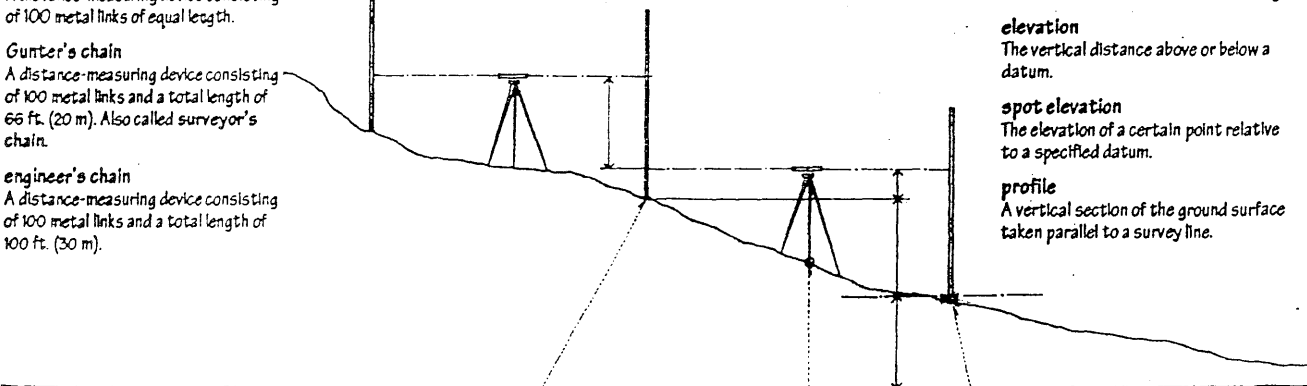
A point temporarily located and marked in order to establish the elevation or position of a surveying instrument at a new station.

**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

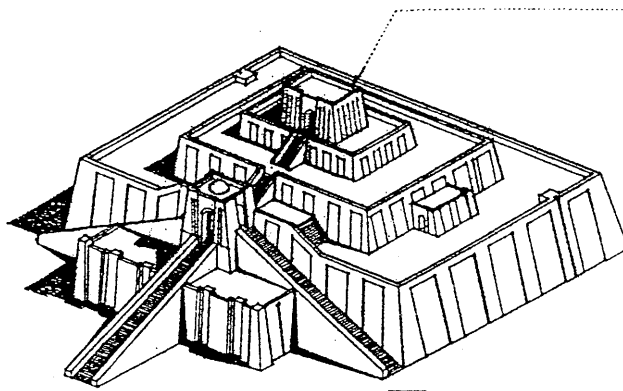
An edifice or place dedicated to the worship or presence of a deity.

### 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.



### 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 3rd millennium B.C. Also, zikkurat.

### 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 a city and a tower, whose top may reach unto heaven; and let us make 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.



### menhir

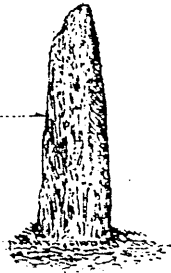
A prehistoric monument consisting of an upright megalith, usually standing alone but sometimes aligned with others.

### 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.

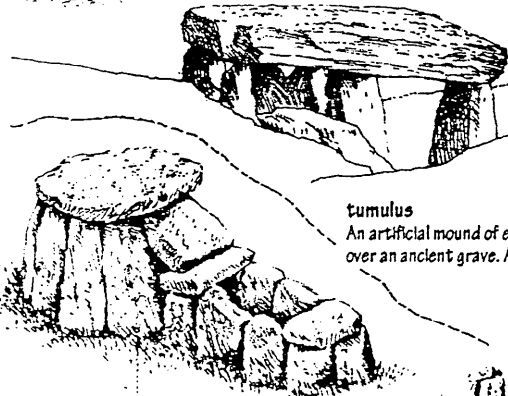


### cairn

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.

### dolmen

A prehistoric monument consisting of two or more large upright stones supporting a horizontal stone slab, found esp. in Britain and France and usually regarded as a tomb.

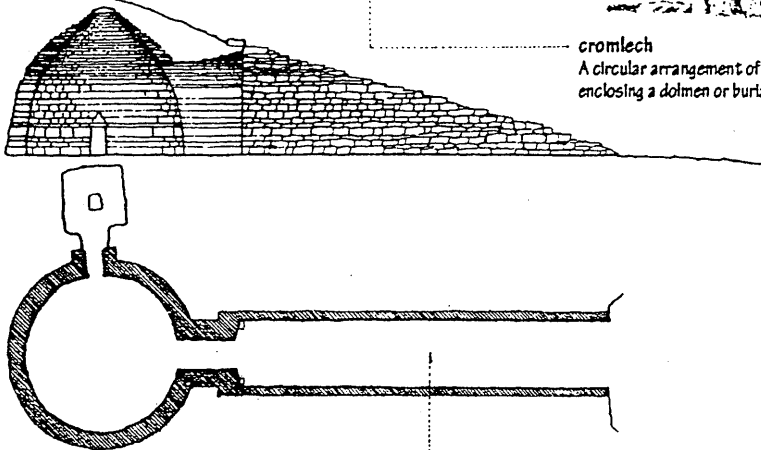
### trilithon

Two upright megaliths supporting a horizontal stone. Also called trilith.



### 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

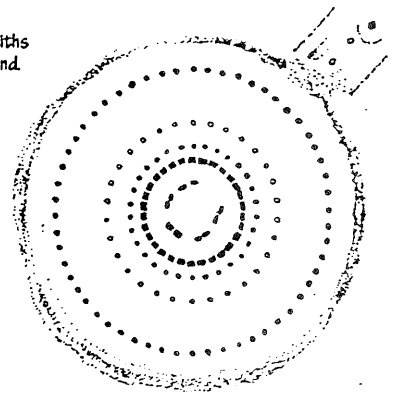
A stone-built subterranean tomb of the Mycenaean civilization consisting of a circular chamber covered by a corbeled dome and entered by a walled passage through a hillside. Also called tholos.

### dromos

A long, deep passageway into an ancient subterranean tomb.

### Stonehenge

A megalithic monument erected in the early Bronze Age c2700 B.C. on Salisbury Plain, Wiltshire, England, consisting of four concentric rings of trilithons and menhirs centered around an altar stone; believed to have been used by a sun cult or for astronomical observations.



## mastaba

An ancient Egyptian tomb made of mud brick, rectangular in plan with a flat roof and sloping sides, from which a shaft leads to underground burial and offering chambers.

## serdab

A small chamber inside a mastaba containing a statue of the deceased.

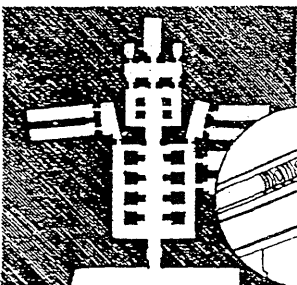
## uraeus

The figure of the sacred asp, depicted on the headdress of ancient Egyptian rulers and deities as an emblem of supreme power.



## pharaoh

Any of the rulers of ancient Egypt who were believed to be divine and had absolute power.



## rock-cut tomb

A tomb hewn out of native rock, presenting only an architectural front with dark interior chambers, of which the sections are supported by masses of stone left in the form of solid pillars.

## 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 astride temple entrances.



## Osirian column

An ancient Egyptian column incorporating the sculptured figure of Osiris, the Egyptian god of death and resurrection.

## necropolis

A historic burial ground, esp. a large, elaborate one of an ancient city.

## cavetto

A concave molding having an outline that approximates a quarter circle.

## 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.

## pylon

A monumental gateway to an ancient Egyptian temple, consisting either of a pair of tall truncated pyramids and a doorway between them or of one such masonry mass pierced with a doorway, often decorated with painted reliefs.

## propylon

A freestanding gateway having the form of a pylon and preceding the main gateway to an ancient Egyptian temple or sacred enclosure.

## 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, Hathoric.

## 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.

## 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.

## syrinx

A narrow rock-cut corridor in an ancient Egyptian tomb.

## 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

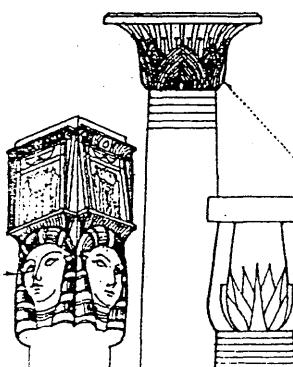
An ancient Egyptian temple for offerings and worship of a deceased person, usually a deified king. In the New Kingdom, cult and funerary temples had many features in common: an avenue of sphinxes leading to a tall portal guarded by a towering pylon, an axial plan with a colonnaded forecourt and a hypostyle 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 sunken 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, c1550–1200 B.C., comprising the 18th to 20th dynasties; characterized by the dominance of its capital at Thebes.

## hypostyle hall

A large hall having many columns in rows supporting a flat roof, and sometimes a clerestory; prevalent in ancient Egyptian and Achaemenid architecture.



## 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.

# TEMPLE

## megaron

A building or semi-independent unit of a building, typically having a rectangular principal chamber with a center 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 surmounted by a low gable 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 before 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 surmounting a colonnade or a major division of a facade.

## tympanum

The triangular space enclosed by the horizontal and raking 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.

## tabernacle

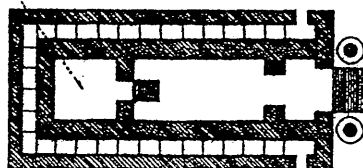
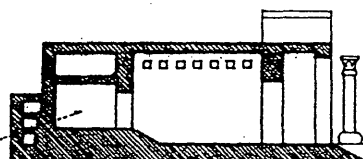
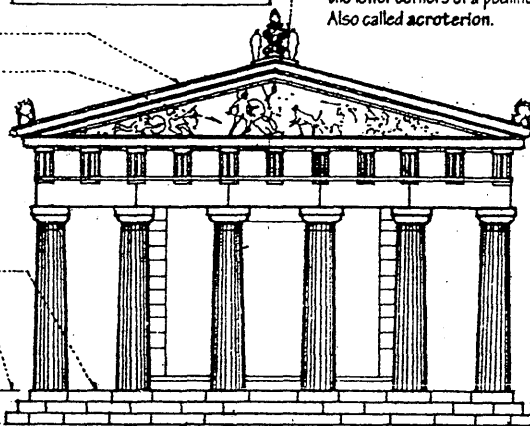
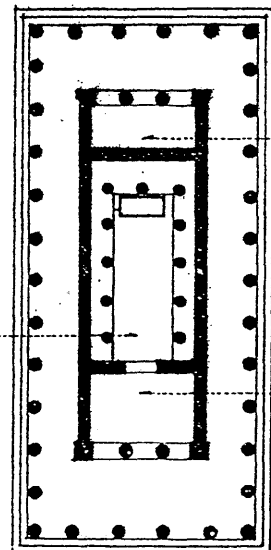
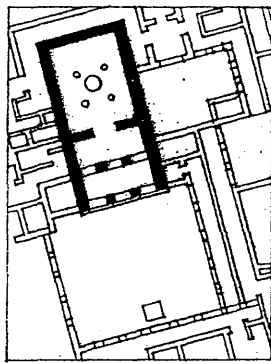
The portable sanctuary in which the Hebrews carried the ark of the covenant through the desert until the building of the Temple of Jerusalem by Solomon.

## holy of holies

The innermost chamber in the biblical Tabernacle and 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.



## epinaos

The rear vestibule of a classical temple. Also called opisthodomos, posticum.

## pronaos

An open vestibule before the cella of a classical temple. Also called anticum.

## acroterium

A pedestal for a sculpture or ornament at the apex or at each of the lower corners of a pediment. Also called acroterion.

## 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.

## stela

An upright stone slab or pillar with a carved or inscribed surface, used as a monument or marker, or as a commemorative tablet in the face of a building. Also, stela.

## acropolis

The fortified high area or citadel of an ancient Greek city.

## antefix

An upright ornament at the eaves of a tile roof concealing the foot of a row of convex tiles that cover the joints of the flat tiles.

## atlas

A sculptured figure of a man used as a column. Also called telamon.

## caryatid

A sculptured female figure used as a column. Also called canephora.

## Temple of Solomon

The first Temple of Jerusalem, completed c950 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 (ulam), the main sanctuary (hekhal), and the holy of holies (debir), all decorated with massive carvings in ivory, gold, and cedar.

## synagogue

A building or place of assembly for Jewish worship and religious instruction.

## bimah

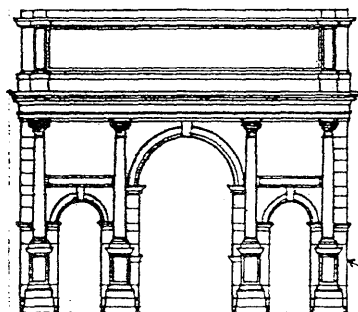
The platform in a synagogue from which services are conducted. Also called almemar, bema.

## 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.

**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 a 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 memorial 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.

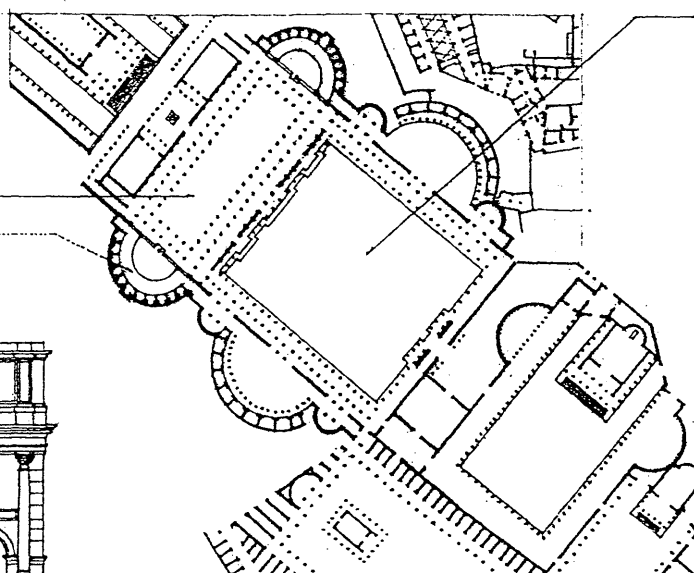
**clithral**  
Of or pertaining to a classical temple that is roofed over.

**hypethral**  
Of or pertaining to a classical temple that is wholly or partly open to the sky. Also, hypaethral.

**pseudoperipteral**  
Having engaged columns at the sides.

**dipteral**  
Having two rows of columns on all sides.

**pseudodipteral**  
Having an arrangement of columns suggesting a dipteral structure but without the inner colonnade.



**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.

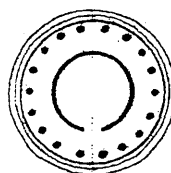
**pantheon**  
A temple dedicated to all the gods of a people.

**cenotaph**  
A monument erected in memory of a deceased person whose remains are buried elsewhere.

**cyrtostyle**  
A convex, usually semicircular portico.

**cyclostyle**  
A circular colonnade or peristyle open at the center.

**monopteron**  
A circular building having a single row of columns surrounding a central structure or a courtyard. Also, monopteros.



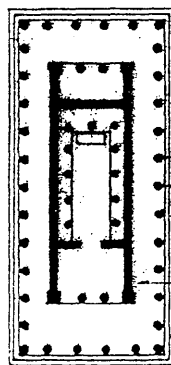
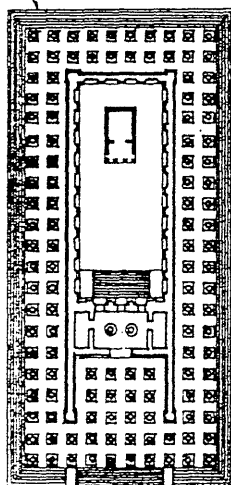
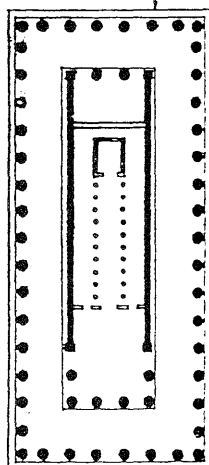
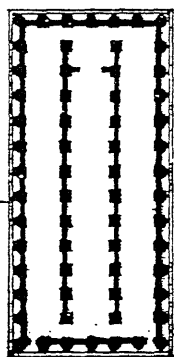
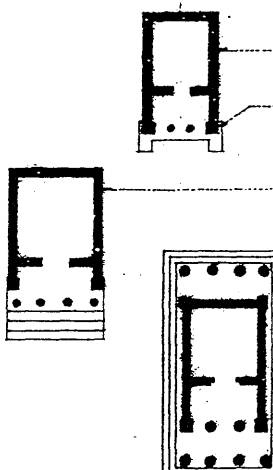
**distyle in antis**  
Having two columns in front between antae.

**anta**  
A rectangular pier or pilaster formed by thickening the end of a projecting wall.

**prostyle**  
Having a portico on the front only.

**apteral**  
Without a colonnade along the sides.

**amphiprostyle**  
Prostyle on both fronts.



**peripteral**  
Having a single row of columns on all sides.

**pteron**  
A colonnade parallel to, but apart from the cella.

**pteroia**  
The passage between the pteron and the cella.

# TEMPLE

## mosque

A Muslim building or place of public worship. Also called *masjid*, *musjid*.

## madrasah

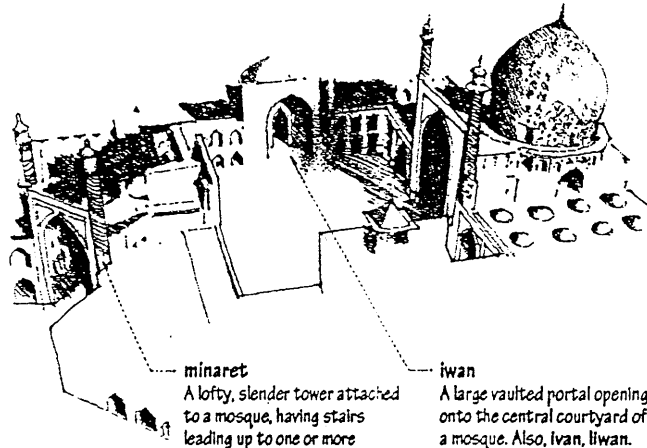
A Muslim theological school arranged around a courtyard and attached to a mosque, found from the 11th century on in Egypt, Anatolia, and Persia. Also, *madrasa*.

## maidaan

The large open square of a city, used as a marketplace or parade ground, esp. in India. Also, *meidan*, *meidan*.

## ziyada

A court or series of courts serving to shelter a mosque from immediate contact with secular buildings.



### minaret

A lofty, slender tower attached to a mosque, having stairs leading up to one or more projecting balconies from which the muezzin calls the Muslim people to prayer.

### iwan

A large vaulted portal opening onto the central courtyard of a mosque. Also, *ivan*, *liwan*.

## Islam

The religious faith of Muslims, based on the teachings of the prophet Muhammad, the central themes of which are belief in the 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*, *Muslem*.

## 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.

## mimbar

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*, *lilah*.

## mihrab

A niche or decorative panel in a mosque designating the qibla.

## Mecca

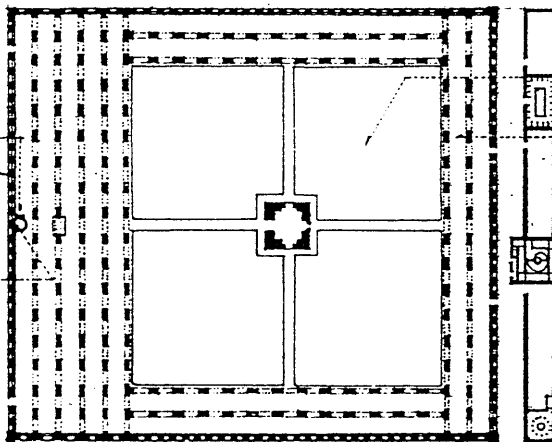
A city in Saudi Arabia, birthplace of Muhammad and spiritual center of Islam.

## Ka'ba

A small, cubical stone building in the courtyard of the Great Mosque at Mecca containing a sacred black stone and regarded by Muslims as the House of God, the objective of their pilgrimages, and the point toward which they turn in praying. Also, *Ka'aba*, *Ka'abah*.

## 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*.

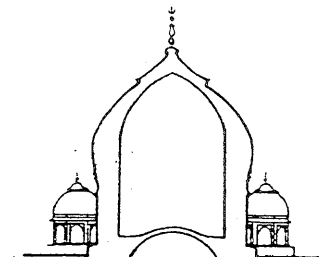


### sahn

The central courtyard of a mosque.

### riwaq

An arcaded 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.

## maksoorah

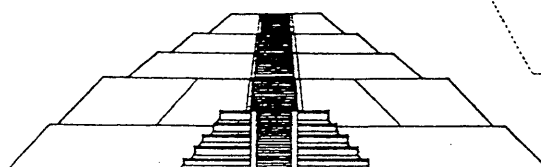
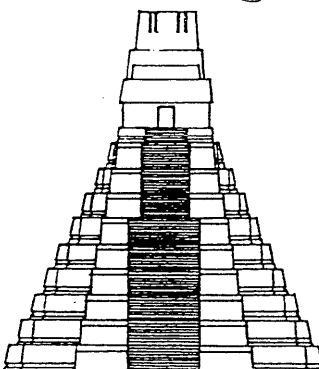
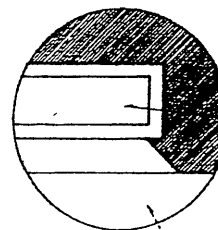
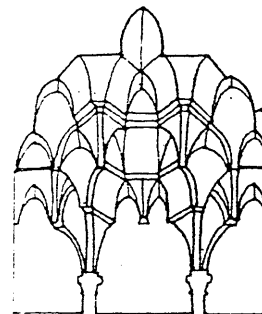
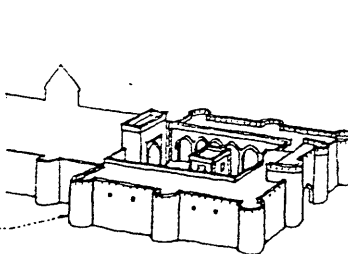
An openwork screen or partition enclosing an area for prayer or a tomb in a mosque.

## tablero

A rectangular, strongly framed panel that overhangs a talud. An original contribution of Teotihuacán architecture, this tablero-talud combination was introduced c.A.D. 150 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.800 B.C. at the Olmec site of La Venta, in Tabasco state, Mexico.



## 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.

## 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.

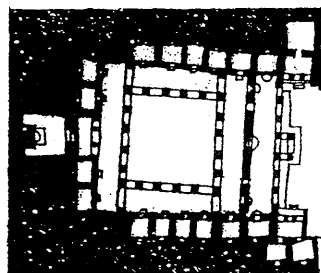


## stamba

A freestanding memorial pillar in Indian architecture, bearing carved inscriptions, religious emblems, or a statue. Also, *stambha*.

## lit

A monolithic stamba, as distinguished from one built up of stone courses.



## viihara

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 cloister was a courtyard containing the main stupa.

## chaitya

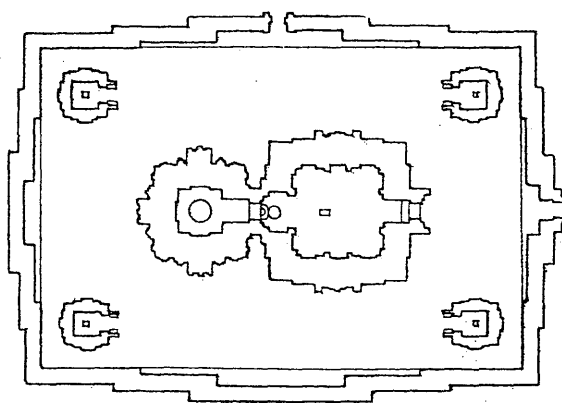
A Buddhist shrine in India, usually carved out of solid rock on a hillside, having the form of an aisled basilica with a stupa at one end.

## wat

A Buddhist monastery or temple in Thailand or Cambodia.

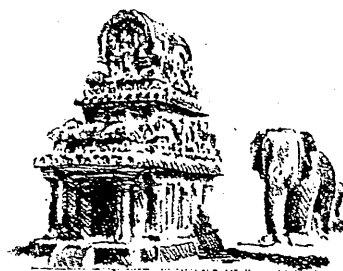
## Khmer

A people of Cambodia who established an empire in the 5th 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 *sikhara*.

## sikhara

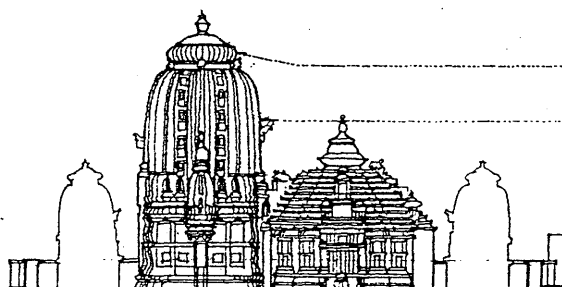
A tower of a Hindu temple, usually tapered convexly and capped by an *amalaka*. Also, *sikra*.

## mandapa

A large, porchlike hall leading to a Hindu temple and used for religious dancing and music.

## gopuram

A monumental, usually ornate gateway tower to a Hindu temple enclosure, esp. in southern India. Also, *gopura*.



## tee

A finial in the form of a conventionalized umbrella, used on stupas, totes, and pagodas.

## chattri

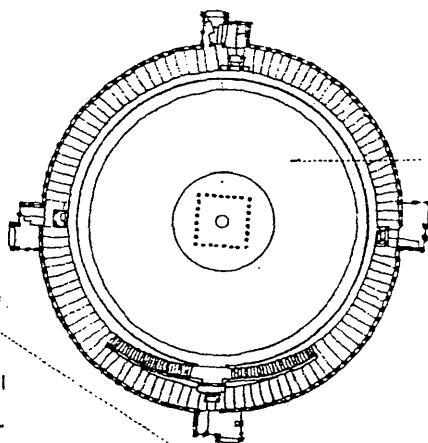
An umbrella-shaped finial symbolizing dignity, composed of a stone disk on a vertical pole.

## torana

An elaborately carved, ceremonial gateway in Indian Buddhist and Hindu architecture, having two or three lintels between two posts.

## vedika

A railing enclosing a sacred area, as a stupa.



## 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 *dagoba*, and in Tibet and Nepal, *chorten*. Also called *tope*.

## Buddhism

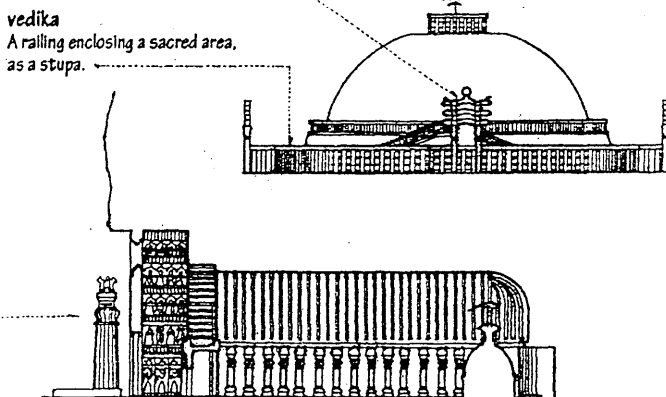
A religion based on the Four Noble Truths, originated in India by Gautama Buddha and later spreading to China, Burma, Japan, Tibet, and parts of Southeast Asia.

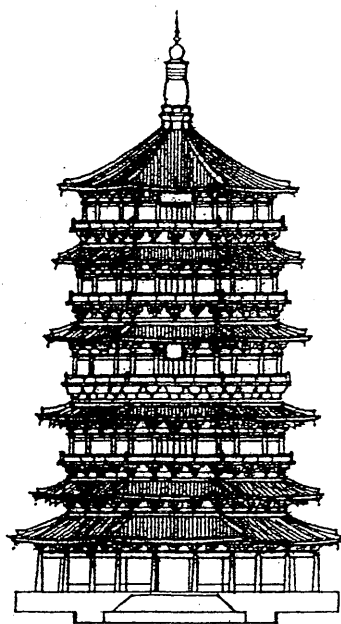
## Four Noble Truths

The doctrines of Buddha: 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

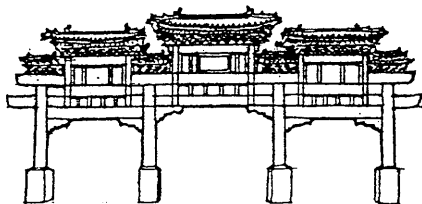
Title of Gautama Siddhartha c563–c483 B.C., Indian philosopher, religious leader, and founder of Buddhism. Also called Gautama Buddha.





**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 or to hold relics. From the stupa, the Indian prototype, the pagoda gradually changed in form to resemble the traditional multistoried watch tower as it spread with Buddhism to China and Japan. Pagodas were initially of timber, but from the 6th century on, were more frequently of brick or stone, possibly due to Indian influence.



**pailou**

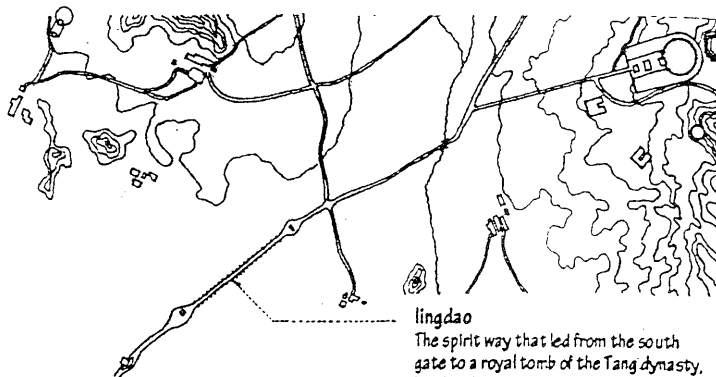
A monumental gateway in Chinese architecture, having a trabeated form of stone or wood construction with one, three, or five openings and often bold projecting roofs, erected as a memorial at the entrance to a palace, tomb, or sacred place; related to the Indian toranas and the Japanese torii. Also, 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.



**lingdao**

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.

**Yungang**

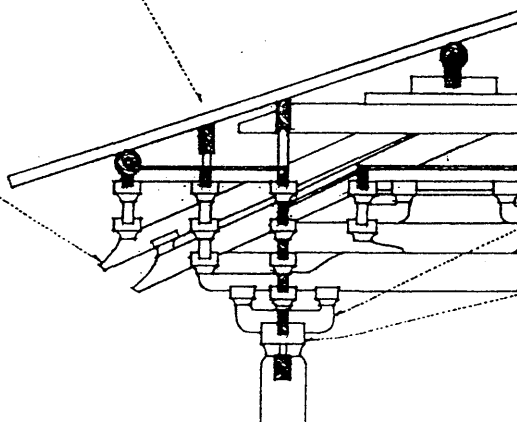
A large Buddhist monastic center in northwest China, begun in A.D. 460, where there are numerous cave temples, each having a shallow, oval-shaped interior with a massive central image of Buddha flanked by two smaller Buddhas; the concept of carving into cliffs is believed to have come to China from India. Also, Yün-kang.

**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, tou-kung.

**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.

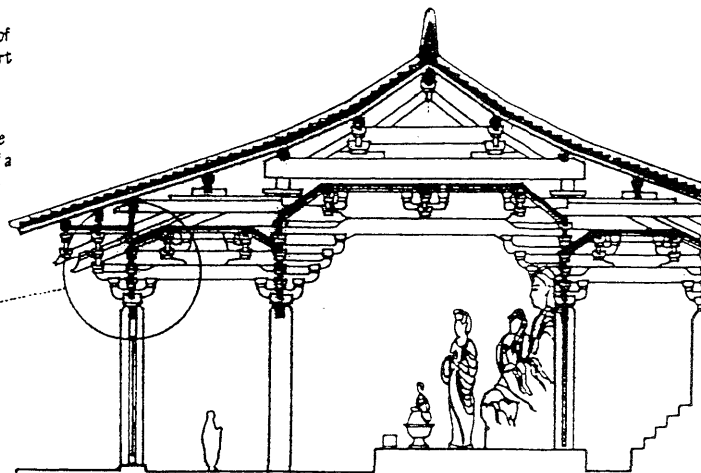


**gong**

A cantilevered bracket in traditional Chinese construction. Also, kung.

**dou**

A bearing block in traditional Chinese construction. Also, tou.





**katsuogi**  
The short wooden billets placed at right angles to the ridge of a Shinto shrine.

**chigi**  
The crossed finial formed by the projecting barge boards at each end of the ridge of a Shinto shrine.

**hashira**  
A sacred post in Shinto architecture, shaped by human hands.

**Nagare-zukuri**  
A style of Shinto shrine, based on the Ise 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 worshippers.

**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.

**haiden**  
The hall of worship of a Shinto shrine, usually in front of the honden.

**honden**  
The main sanctuary of a Shinto shrine.

**bent approach**  
An approach through two gateways that are not aligned, so that it is necessary to make a sharp turn to pass from the first through the second, used for privacy in houses or temples, or for security in fortifications.

**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.

**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.

**Shimmi-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 railed veranda surrounds the structure at floor level, a freestanding post at each gable end supports the ridge, and the bargeboards extend outward from the thickly thatched roof, forming chigi at each end.

**kodo**  
An assembly hall for monks in a Japanese Buddhist temple, in which sacred texts are read.

**to**  
A Japanese pagoda enshrining Buddhist holy relics.

**sorin**  
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 hondo for this sanctuary, the Shingon and Tendai sects use chudo, and the Zen sect uses butsuden.

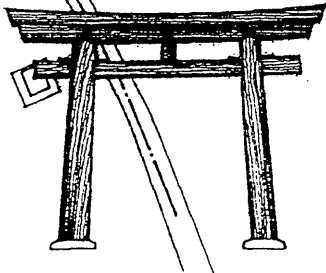
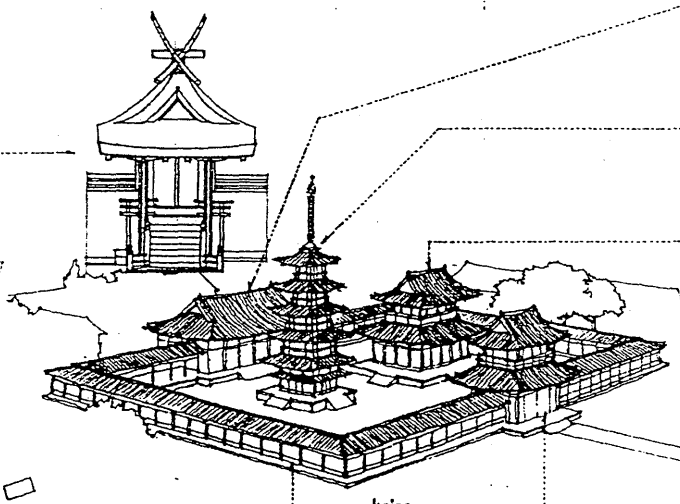
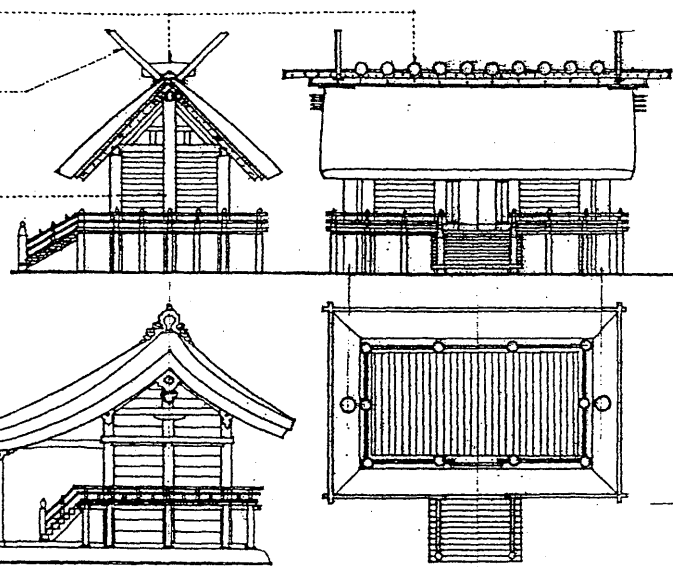
**nandaimon**  
The principal south gateway to a Japanese temple or shrine.

**chumon**  
The inner gateway to the precinct of a Japanese Buddhist temple.

**shoro**  
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.

**butsu**  
A representation of Buddha.

**daibutsu**  
A large representation of Buddha.



# 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

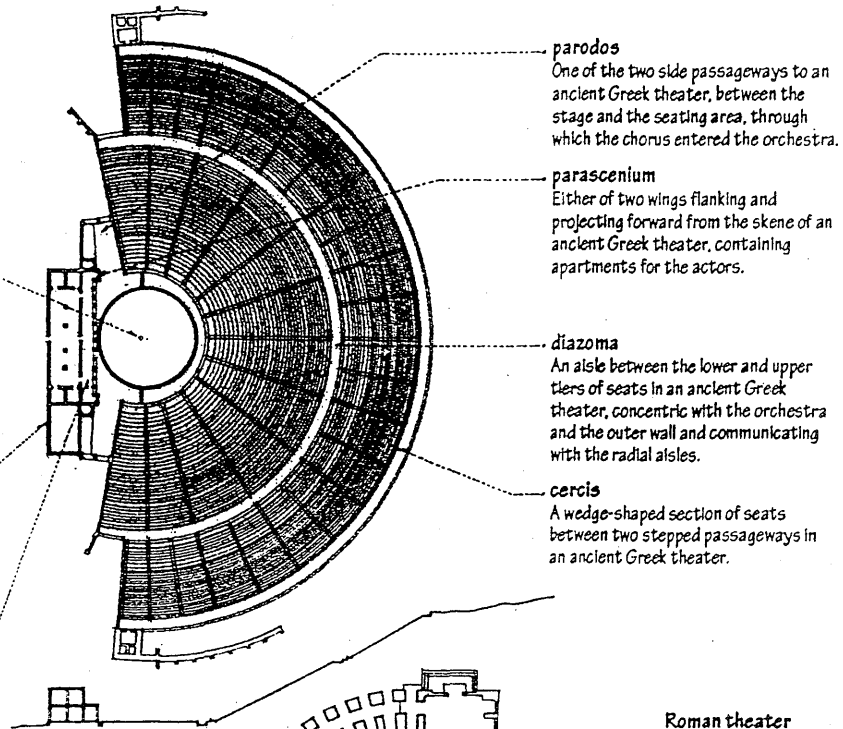
The group of actors in ancient Greece that served as major participants in or commentators on the main action of the drama.

### 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.



### parodos

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.

### parascenium

Either of two wings flanking and projecting forward from the skene of an ancient Greek theater, containing apartments for the actors.

### diazoma

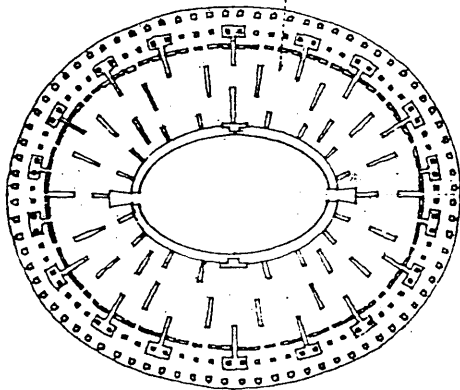
An aisle between the lower and upper tiers of seats in an ancient Greek theater, concentric with the orchestra and the outer wall and communicating with the radial aisles.

### cercis

A wedge-shaped section of seats between two stepped passageways in an ancient Greek theater.

### gradin

One of a series of steps or tiered seats, as in an amphitheater. Also, gradine.

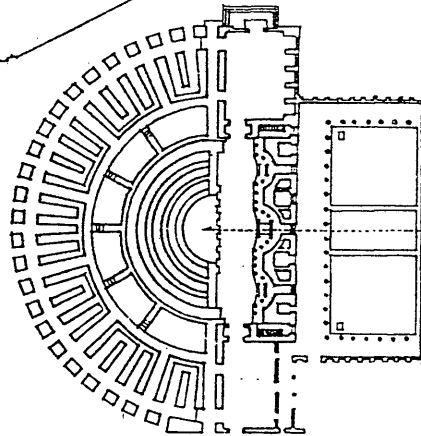


## amphitheater

An oval or round building with tiers of seats around a central arena, as those used in ancient Rome for gladiatorial contests and spectacles.

### podium

A raised platform encircling the arena of an ancient Roman amphitheater, having on it the seats of privileged spectators.



## Roman theater

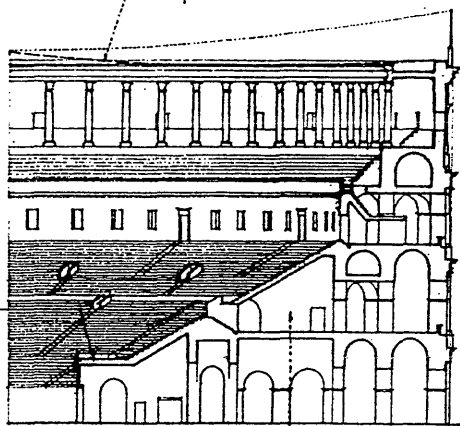
An open-air theater modeled upon that of the ancient Greeks, but often built on level ground with colonnaded galleries, a semicircular orchestra, and a raised stage backed by an elaborate architectural structure.

### orchestra

A semicircular space in the front of the stage of an ancient Roman theater, reserved for senators and other distinguished spectators.

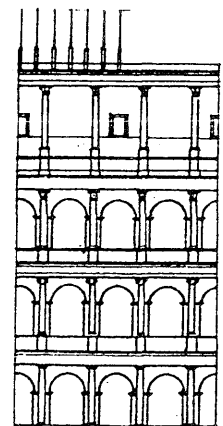
### velarium

A canvas awning drawn over an ancient Roman amphitheater to protect the audience from rain or sun.



### vomitory

A large opening, as in an ancient Roman amphitheater or stadium, permitting large numbers of people to enter or leave. Also, vomitorium.



### supercolumniation

The placing of one order of columns above another, usually with the more elaborate orders at the top.

**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*.

**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.

**aisle**  
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 on the stage side of the proscenium, including the stage, wings, and storage area.

**gridiron**  
A steel 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.

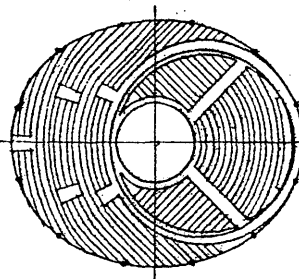
**batten**  
A length of metal pipe hung from the gridiron, for suspending scenery or equipment, as drop scenes, flats, or lighting units. Also called *pipe batten*.

**flat**  
A piece of scenery consisting of a wooden frame, usually rectangular, covered with lightweight board or fabric.

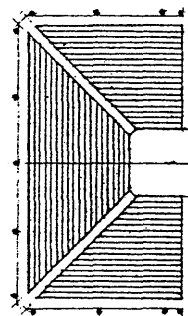
**orchestra shell**  
A sound-reflecting structure that closes off the flies and wings of a stage to form a performing area for music.

**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*.



**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.

**fire curtain**  
A curtain of asbestos or other fireproof material that can be lowered just inside the proscenium arch in case of fire, sealing off the backstage area from the auditorium. Also called *safety curtain*.

**border**  
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 drapery or flat piece hung across the top of the proscenium arch to mask the flies and, together with the tormentors, frame the stage opening.

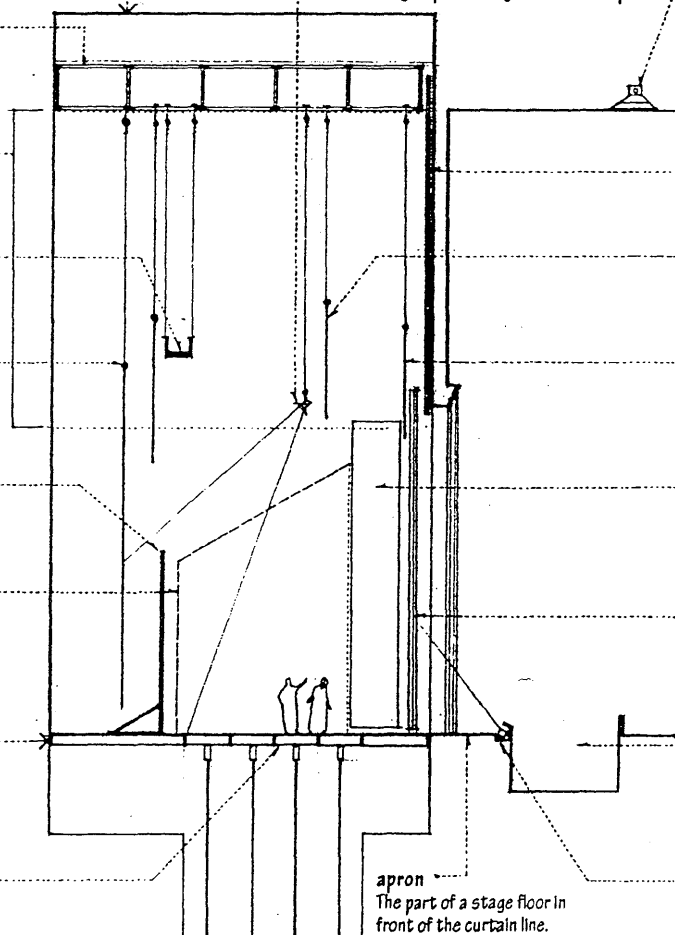
**tormentor**  
A curtain or framed structure used directly behind the proscenium at each side of the stage to screen the wings and sidelights from the audience.

**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.

**apron**  
The part of a stage floor in front of the curtain line.

**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

**opera house**  
A theater devoted chiefly to the public performance of operas.

**front of the house**  
The parts of a theater that are on the audience side of the fire wall.

**balcony**  
A gallery that projects over the main floor of a theater to accommodate additional people.

**gallery**  
An upper floor projecting over the main floor of a theater or hall.

**wing balcony**  
The part of a balcony that extends along the sidewalls of an auditorium.

**loge**  
A private seating area for a small group of spectators in a theater or opera house.

**peanut gallery**  
The rearmost and cheapest section of seats in the uppermost balcony of a theater.

**sight line**  
Any of the lines of sight between the spectators and the stage or playing area of a theater or stadium.

**dress circle**  
A curved or circular division of seats in a theater, opera house, or the like, usually the first gallery, originally set apart for spectators in evening dress.

**mezzanine**  
The lowest balcony or forward part of such a balcony in a theater.

**grand tier**  
The first tier of boxes immediately above the parterre in a large opera house or theater.

**tier**  
One of a number of galleries, as in a theater.

**orchestra**  
The entire main-floor space for spectators in a theater or auditorium.

**parterre**  
The rear section of seats, and sometimes also the side sections, of the main floor of a theater, opera house, or concert hall. Also called **parquet circle**.

**backstage**  
The area behind the proscenium in a theater, esp. in the wings and dressing rooms.

**auditorium**  
The space set apart for the audience in a theater or meeting hall.

**lobby**  
A hall serving as a passageway or waiting room at or near the entrance to a theater, hotel, or apartment house. Also called **foyer**.

**lounge**  
A large public waiting room, as in a theater, hotel, or air terminal, often having adjoining washrooms.

**box office**  
The office of a theater or stadium at which tickets are sold.

**marquee**  
A tall rooflike projection above a theater entrance, usually containing the name of a currently featured play or film and its stars.

**dressing room**  
A room for use in getting dressed, esp. one for performers backstage in a theater or television studio.

**wing**  
The platform or space to the right or left of the stage proper.

**runway**  
A narrow platform or ramp extending from a stage into the orchestra pit or into an aisle of an auditorium.

**green room**  
A lounge in a theater, concert hall, or broadcasting studio, for use by performers when they are not on stage.

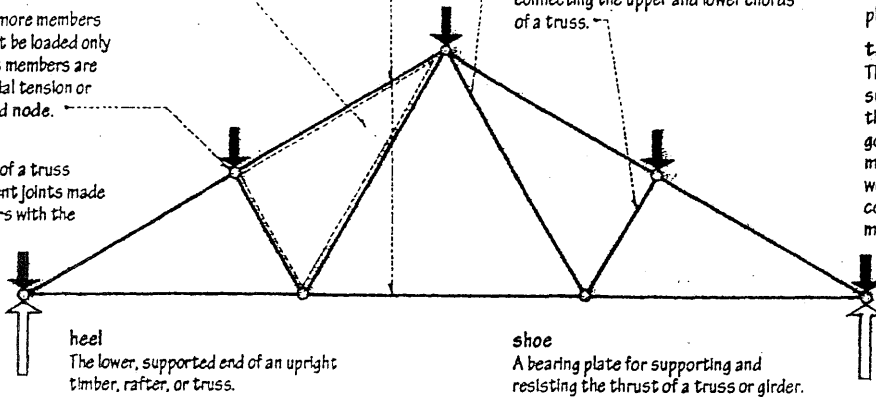
**panel**  
The space within the web of a truss between any two panel points on a chord and a corresponding pair of joints or a single joint on an opposite chord.

**panel point**  
A joint between two or more members of a truss. A truss must be loaded only at its panel points if its members are to be subject only to axial tension or compression. Also called node.

**panel length**  
The space on the chord of a truss between any two adjacent joints made by principal web members with the chord.

**chord**  
Either of the two principal members of a truss extending from end to end and connected by web members.

**web**  
The integral system of members connecting the upper and lower chords of a truss.



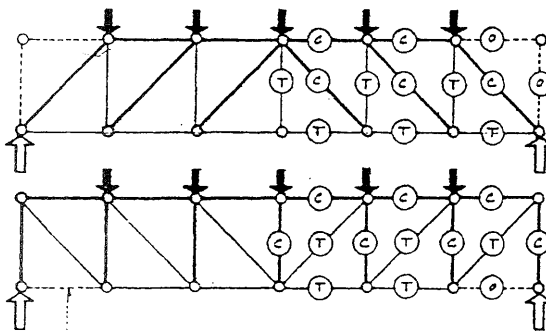
A structural frame based on the geometric rigidity of the triangle and composed of linear members subject only to axial tension or compression.

## plane truss

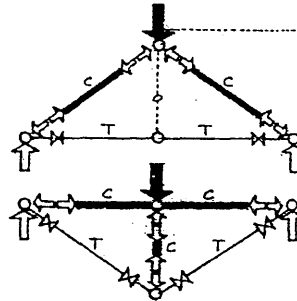
A truss all of whose members lie in a single plane.

## 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.



**zero-force member**  
A truss member that theoretically carries no direct load and whose omission would not alter the stability of the truss configuration.



## 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

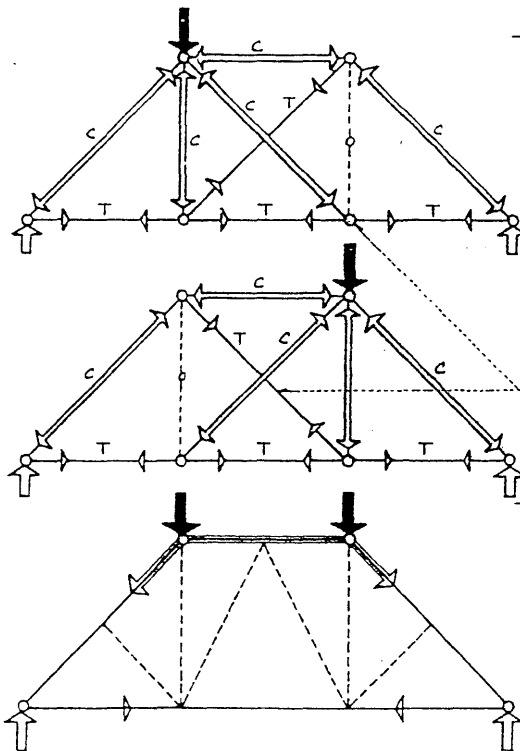
Additional bending and shear stresses in a truss member resulting from an eccentric connection or a joint fixed against relative rotation. While trusses are assumed to have idealized pin connections, truss connections in reality may be bolted, welded, or riveted, imparting a degree of rigidity to the 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.

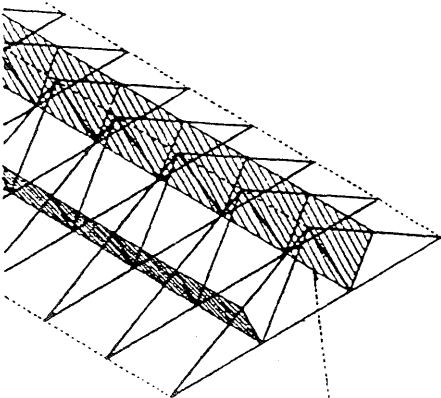
## counterbrace

A truss member subject to tension or compression under varying load conditions.



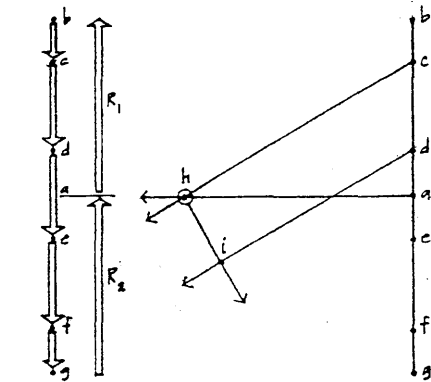
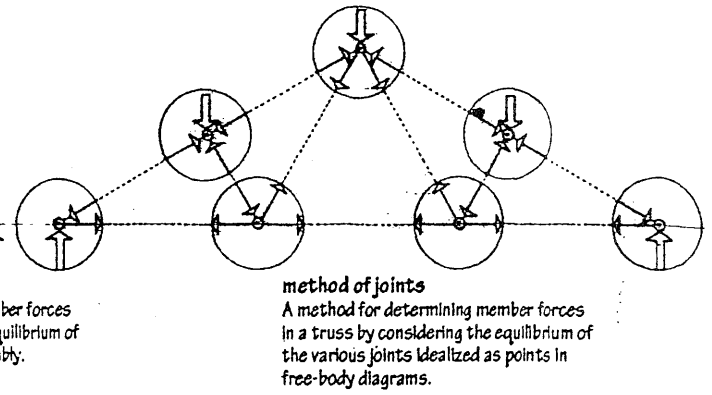
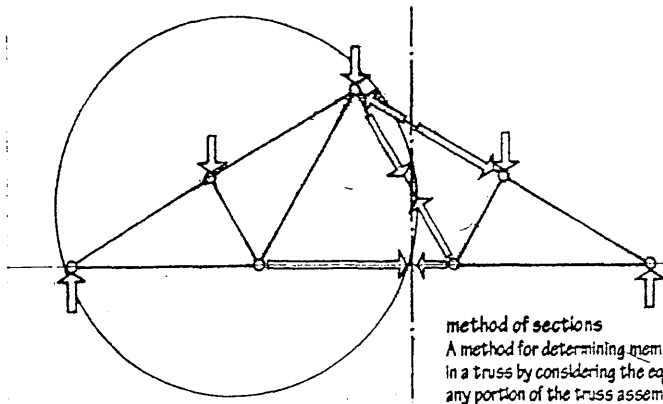
## funicular truss

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.



**trussing**  
A structure formed by trusses. While rigid in its own plane, a truss must be braced in a perpendicular direction to prevent lateral buckling.

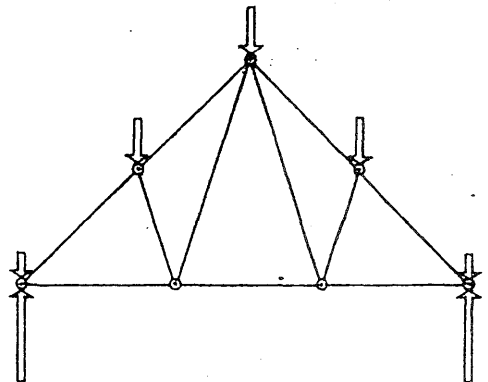
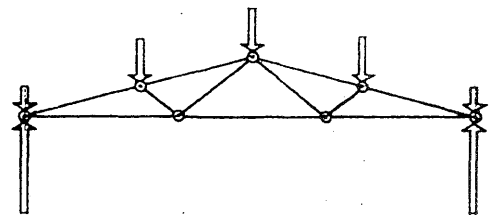
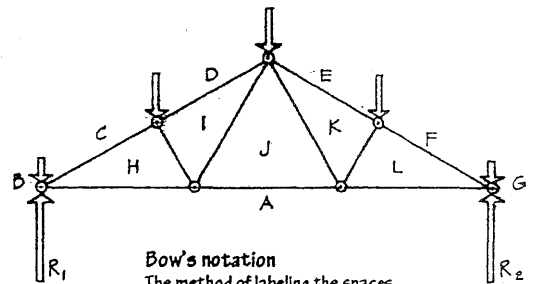
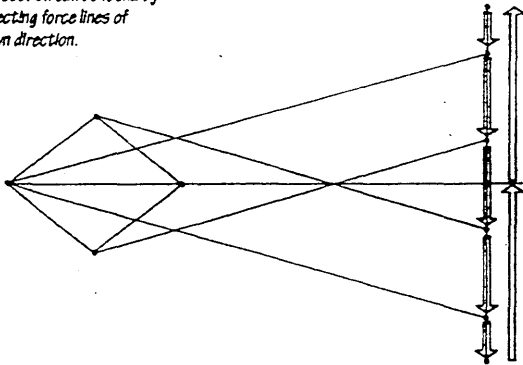
**local buckling**  
The buckling of a thin compressed element of a structural member, leading to failure of the whole.



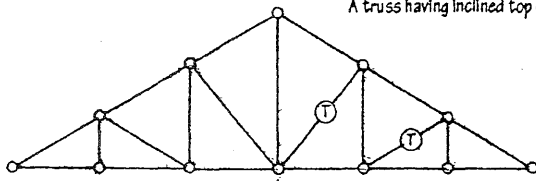
Since theoretically only axial forces are transmitted from one member to another at the joints, the direction of member forces can be drawn parallel to the truss members. Working from two known points, a third point of intersection can be found by projecting force lines of known direction.

**Maxwell diagram**  
A graphic method for determining the magnitude and character of the stresses in the members of a truss.

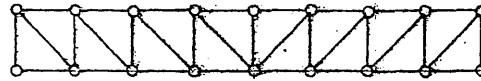
Capital letters designate panel spaces, while lowercase letters designate ends of the force vectors.



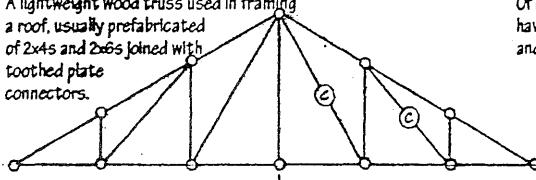
**pitched truss**  
A truss having inclined top chords.



**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 rafter**  
A lightweight wood truss used in framing a roof, usually prefabricated of 2x4s and 2x6s joined with toothed plate connectors.

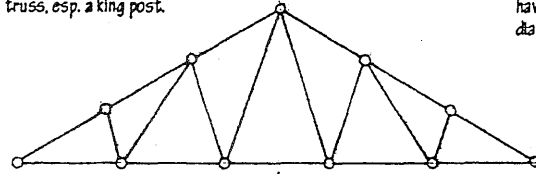


**Pratt**  
Of or pertaining to a flat or pitched truss having vertical web members in compression and diagonal web members in tension.



**trussed joist**  
A lightweight, flat wood truss used in framing a floor, usually prefabricated of 2x4s and 2x6s joined with toothed plate connectors.

**crown post**  
Any vertical member in a pitched truss, esp. a king post.

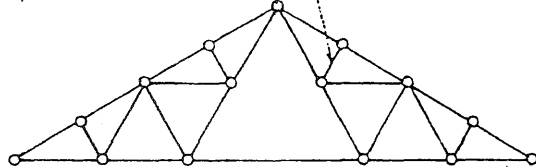


**Howe**  
Of or pertaining to a flat or pitched truss having vertical web members in tension and diagonal web members in compression.



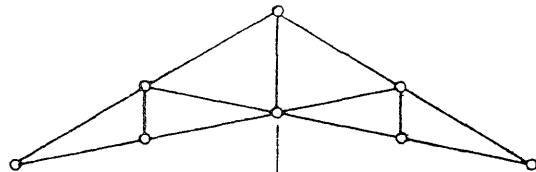
**Belgian**  
Of or pertaining to a pitched truss having only inclined web members.

**diagonal**  
An inclined web member joining the top and bottom chords of a truss.



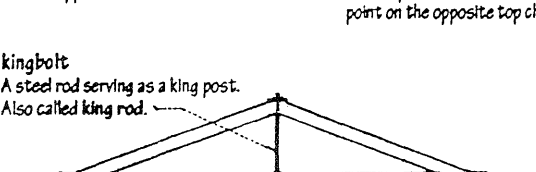
**subdiagonal**  
An inclined web member joining a chord with a main diagonal.

**fan truss**  
A truss having more than two web members radiating from a common point on the bottom chord.



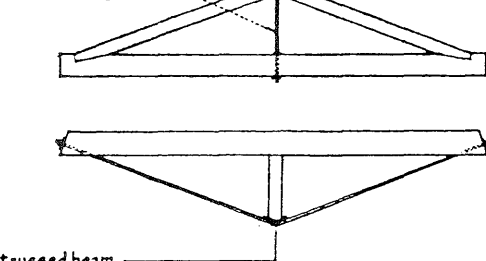
**Fink truss**  
A Belgian truss having subdiagonals to reduce the length of compression web members toward the centerline of the span.

**raised-chord truss**  
A truss having a bottom chord raised substantially above the level of the supports.

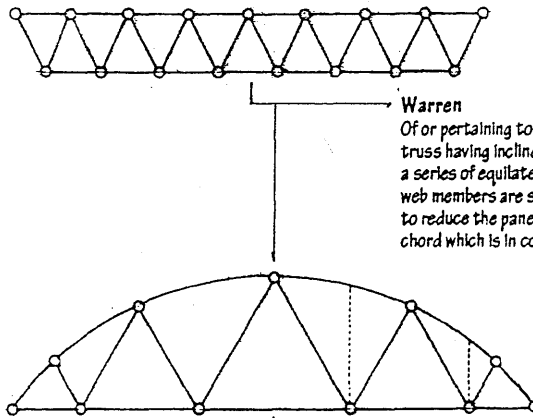


**scissors truss**  
A pitched truss having tension members extending from the foot of each top chord to an intermediate point on the opposite top chord.

**kingbolt**  
A steel rod serving as a king post. Also called king rod.

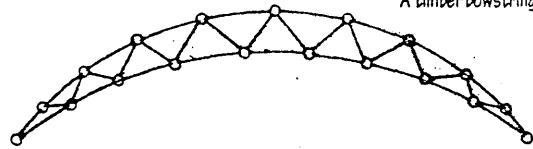


**Warren**  
Of or pertaining to a flat or bowstring truss having inclined web members forming a series of equilateral triangles. Vertical web members are sometimes introduced to reduce the panel lengths of the top chord which is in compression.

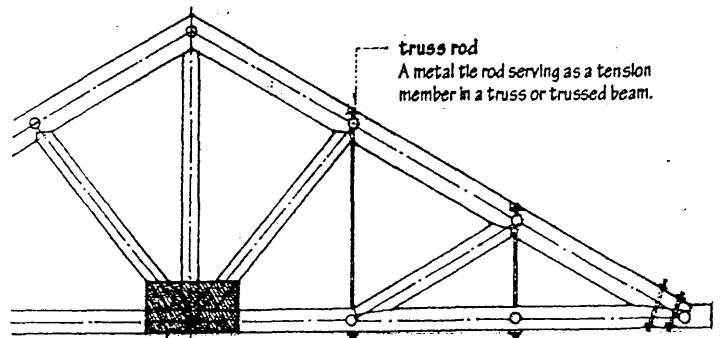


**bowstring truss**  
A truss having a curved top chord meeting a straight bottom chord at each end.

**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.

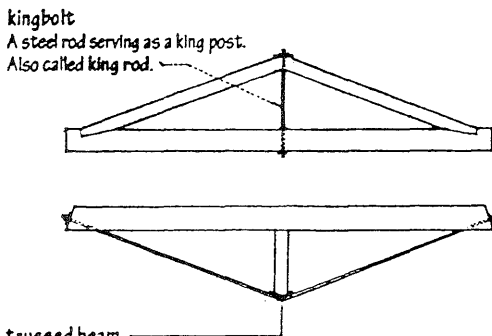


**truss rod**  
A metal tie rod serving as a tension member in a truss or trussed beam.

**gusset**  
A plate for uniting structural members meeting in a single plane. Also called gusset plate.

**composite truss**  
A truss having timber compression members and steel tension members.

**trussed beam**  
A timber beam stiffened by a combination of diagonal truss rods and either compression struts or suspension rods.



# 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.

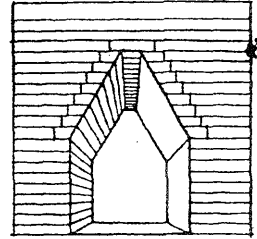
## severy

A bay 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.

## amortizement

A sloping top on a buttress or projecting pier to shed rainwater.

## nosing

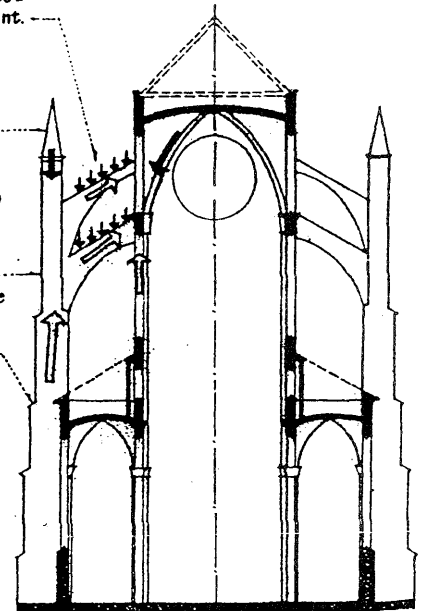
A projecting edge of a buttress.

## shaft

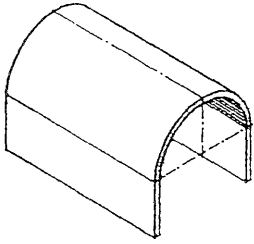
A distinct, slender, vertical masonry feature engaged in a wall or pier and supporting or feigning to support an arch or a ribbed vault.

## 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.

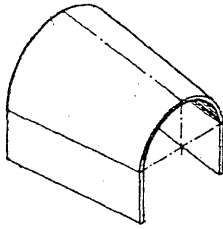






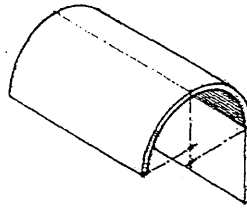
**barrel vault**

A vault having a semicircular cross section. Also called *cradle vault*, *tunnel vault*, *wagon vault*.



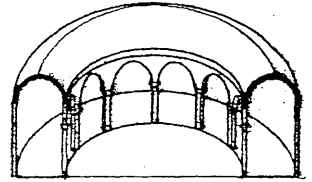
**conical vault**

A vault having a circular cross section that is larger at one end than the other.



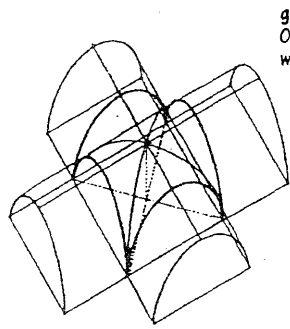
**rampant vault**

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.

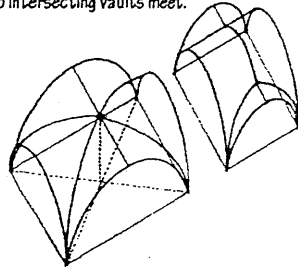


**groin vault**

A compound vault formed by the perpendicular intersection of two vaults, forming arched *diagonal arrises* called *groins*. Also called *cross vault*.

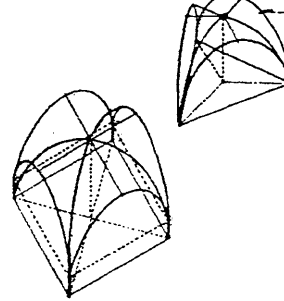
**groin**

One of the curved lines or edges along which two intersecting vaults meet.



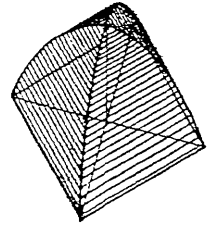
**underpitch vault**

A compound vault having a central vault intersected by vaults of lower pitch. Also called *Welsh vault*.



**tripartite vault**

A compound vault for covering a triangular space, formed by the intersection of three barrel vaults.

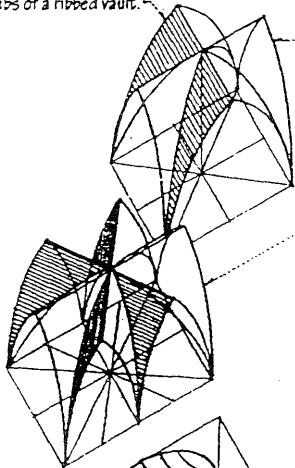


**cloister vault**

A compound vault formed by four coxes meeting along diagonal vertical planes. Also called *coved vault*.

**web**

A surface framed by the ribs of a ribbed vault.



**rib vault**

A vault supported by or decorated with arched *diagonal ribs*. Also, *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 archlike members supporting a vault at the groins, defining its distinct surfaces or dividing these surfaces into panels.

**arc doubleau**

A rib spanning the longitudinal axis 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**

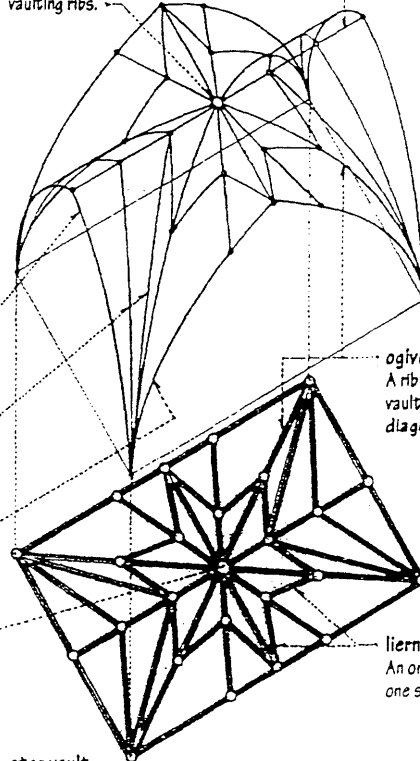
A sculptured ornament suspended from a roof truss, vault, or ceiling. Also called *drop*.

**key**

The keystone at the crown of an arch or at the intersection of two or more vaulting ribs.

**ridge rib**

A horizontal rib marking the crown of a vaulting compartment.



**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.

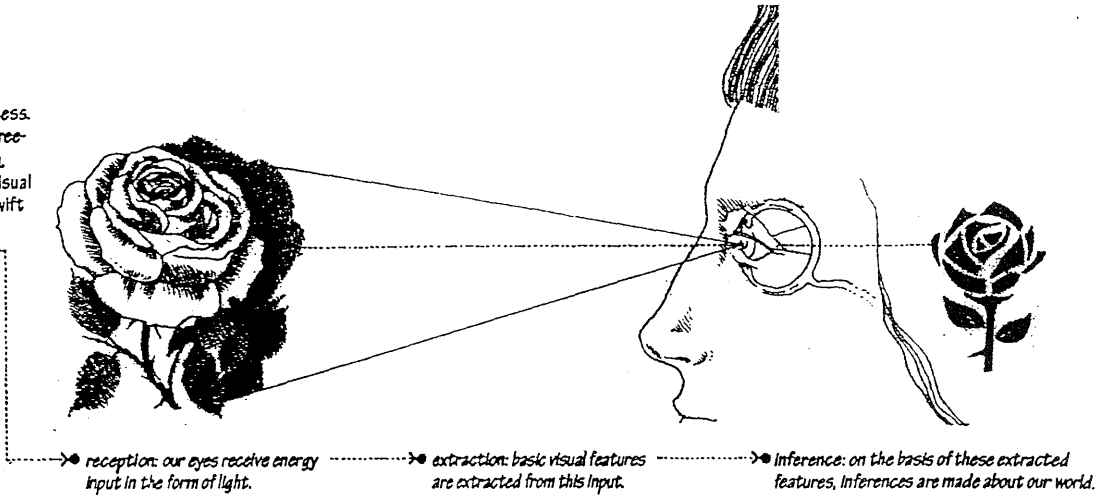
**fan vault**

A vault composed of a number of concave conoidal 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.

VISION

Sight: the act or power of sensing with the eyes.

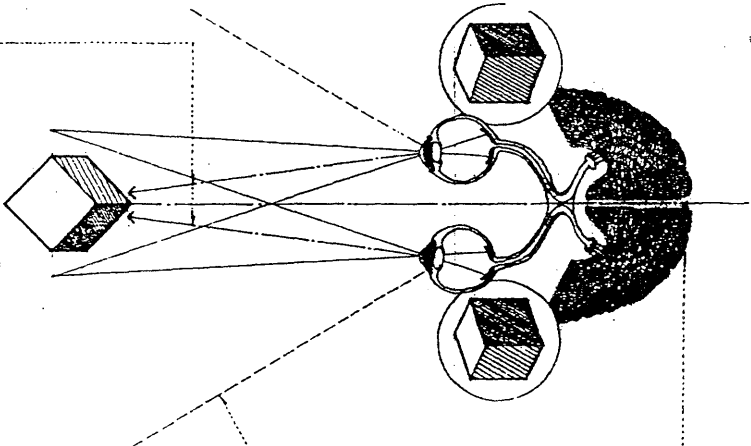
see  
To perceive with the eyes. The act of seeing is a dynamic and creative process. It is capable of delivering a stable, three-dimensional perception of the moving, changing images which make up our visual world. There are three steps in the swift and sophisticated processing which results in the images we see.



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.

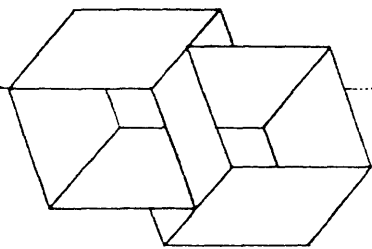
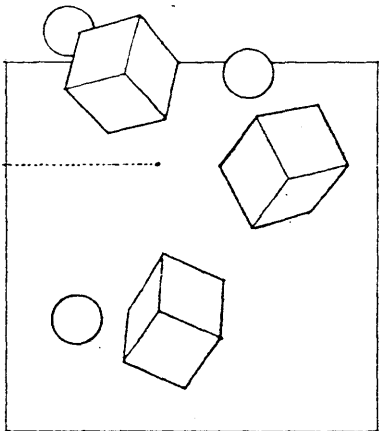
visuospatial  
Pertaining to perception of the spatial relationships among objects within the field of vision.

orientation  
The ability to locate oneself in one's environment with reference to time, place, and people.

visual literacy  
The ability to apprehend and interpret pictures, drawings, or other visual images.

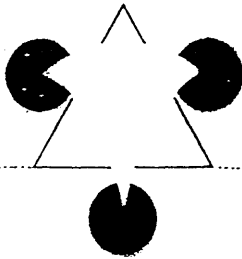
eye  
Appreciative or discriminating visual perception.

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.

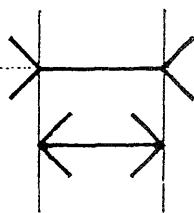


visual cortex  
The portion of the cerebral cortex of the brain that receives and processes impulses from the optic nerves.

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.



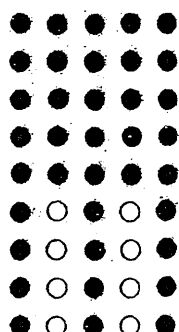
# camouflage

The obscuring of a form or figure that occurs when its shape, pattern, texture, or coloration is similar to that of its surrounding field or background.



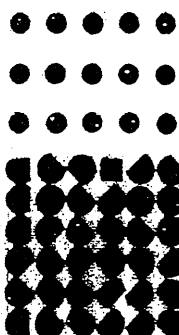
# projection

A property of perception in which the mind's eye searches for meaning by imagining and projecting known or familiar images onto the seemingly amorphous shapes of a pattern until it finds a match which makes sense. This attempt to complete an incomplete pattern, or find a meaningful pattern embedded in a larger one, is in accordance with what we already know or expect to see. Once seen and understood, it is difficult to not see the image.



# similarity

A property of perception in which there is a tendency to group things which have some visual characteristic in common, as a similarity of shape, size, color, orientation or detail.



# proximity

A property of perception in which there is a tendency to group elements which are close together, to the exclusion of those which are further away.

# continuity

A property of perception in which there is a tendency to group elements which continue along the same line or in the same direction. This search for continuity of line and direction can also lead to our perception of the simpler, more regular figures or patterns in a composition.

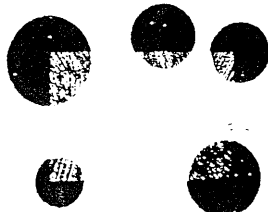


# constancy

A perceptual phenomenon in which apparent differences in size are ignored in order to identify and categorize things, regardless of how distant they are, leading to the perception of a class of objects as having uniform size and constant color and texture.

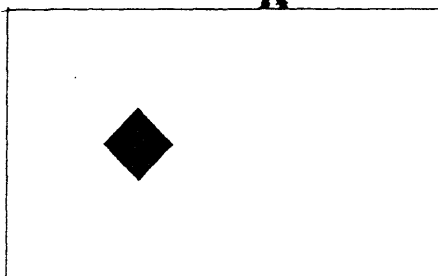
# closure

A property of perception in which there is a tendency for an open or incomplete figure to be seen as if it were a closed or complete and stable form.



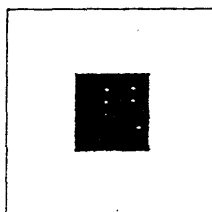
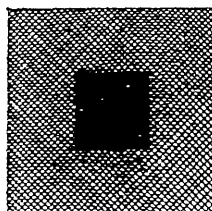
# successive contrast

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.



# perception

The act or faculty of apprehending by means of the senses or of the mind.

# visual perception

An awareness derived by the visual system in response to an external stimulus.

# 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.

# figure

A shape or form, as determined by outlines or exterior surfaces.

# ground

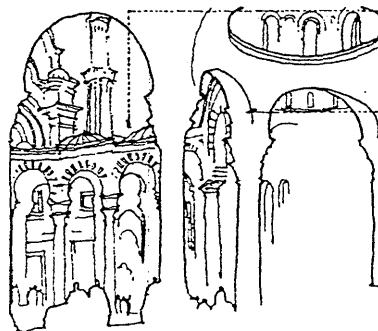
The receding part of a visual field against which a figure is perceived. Also called background.

# background

The parts or portion of a scene, situated in the rear, as opposed to foreground.

# foreground

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, as reflexes or sensations, but through gestalts functioning separately or interrelatedly. Also called configurationism.

# 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 instantaneously 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.

WALL

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**.

**canton**  
A pilaster 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.

**pier**  
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, fire wall, or party wall that rises above the roof.

**gable wall**  
A wall bearing or crowned by a gable.

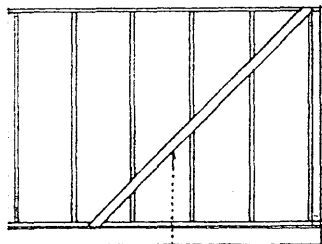
**basement wall**  
A foundation wall that encloses a usable area under a building.

**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.

**corner brace**

A diagonal brace let into studding 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 three 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.

**firestop**

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 studding to carry the ends of joists. Also called ledger, ribband, 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.

**plate**

Any of various horizontal timbers laid flat across the heads of studding or upon floors to support joists, rafters, or studs at or near their ends.

**wall plate**

A horizontal member built into 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.

**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.

**cripple**

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.

**anchor bolt**

Any of various rods 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.

**sill**

The lowest horizontal member of a frame structure, resting on and anchored to a foundation wall. Also called mudsill, 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.

**L 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.

# WALL

## siding

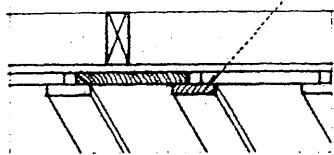
A weatherproof material, as shingles, boards, or units of sheet metal, used for surfacing the exterior walls of a frame building.

## corner board

A board against which siding is fitted at the corner of a frame structure.

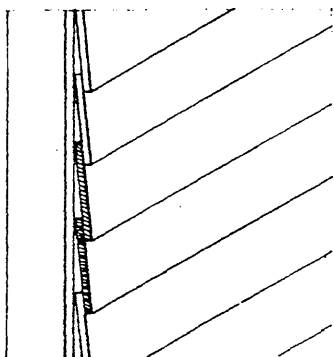
## batten

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.



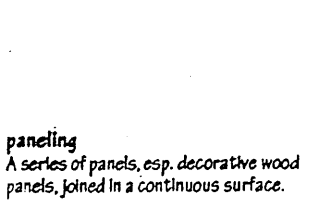
## board and batten

Siding consisting of wide boards or plywood sheets set vertically with butt joints covered by battens.



## colonial siding

Siding composed of plain, square-edged boards laid horizontally so that the upper overlaps the one below.



## paneling

A series of panels, esp. decorative wood panels, joined in a continuous surface.

## surround

An encircling area or border.

## 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.

## nullion

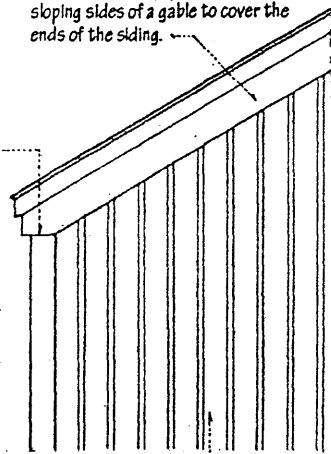
A vertical member dividing the panels in wainscoting.

## ado

The lower portion of an interior wall when faced or treated differently from the upper section, as with paneling or wallpaper.

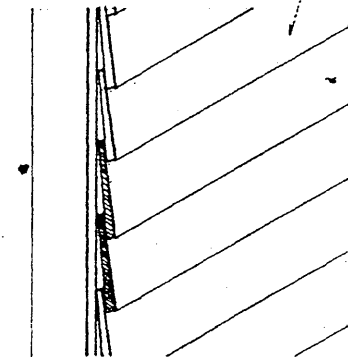
## rake

A board or molding placed along the sloping sides of a gable to cover the ends of the siding.



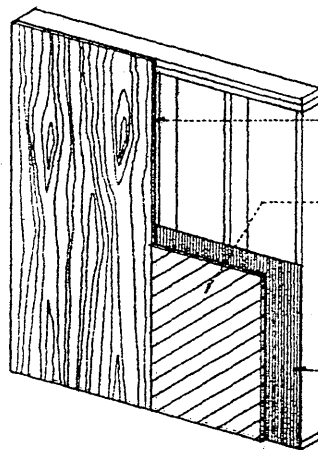
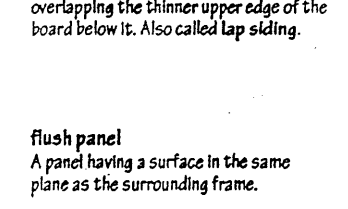
## vertical siding

Siding consisting of matched boards applied vertically.



## bevel siding

Siding 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.



## 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

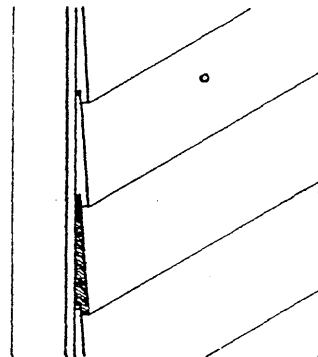
A structure of boards, as for sheathing or subflooring.

## building paper

Any of various papers, felts, or similar sheet material used in construction to prevent the passage of air or moisture.

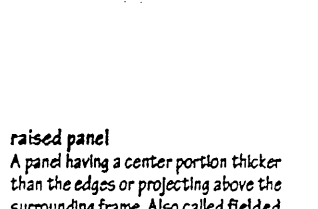
## clapboard

A long, thin board with one edge thicker than the other, laid horizontally as bevel siding.



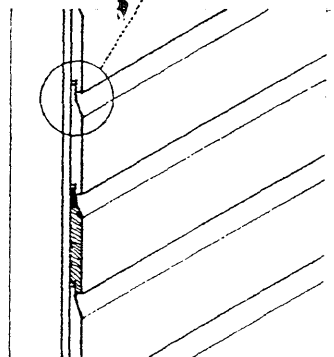
## Dolly Varden siding

Bevel siding rabbeted along the lower edge to receive the upper edge of the board below it.



## shiplap

A flush, overlapping joint, as a rabbet, between two boards joined edge to edge. Also, the boarding joined with such overlapping joints.



## drop siding

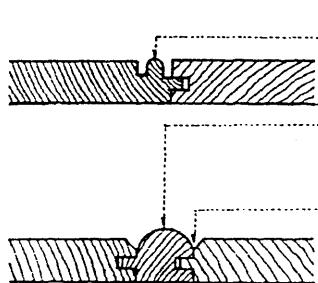
Siding composed of boards narrowed along the upper edges to fit into rabbets or grooves in the lower edges, laid horizontally with their backs flat against the sheathing or studs of the wall. Also called novelty siding, rustic siding.

## sunk panel

A panel having a surface recessed below the surrounding frame or surface.

## raised panel

A panel having a center portion thicker than the edges or projecting above the surrounding frame. Also called fielded panel.



## flush bead

A bead having its outer surface at the same level as the adjoining surfaces.

## cock bead

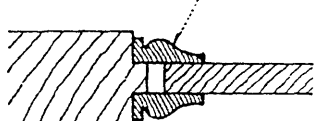
A bead that projects above or beyond the adjoining surfaces.

## quirk

A groove or acute angle dividing a bead or other molding from adjoining members or surfaces.

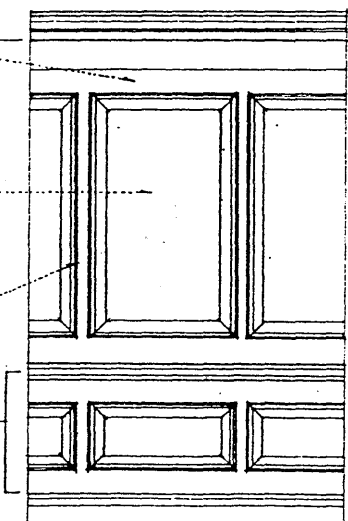
## bolection

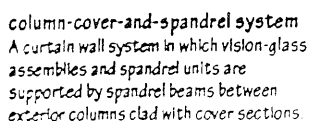
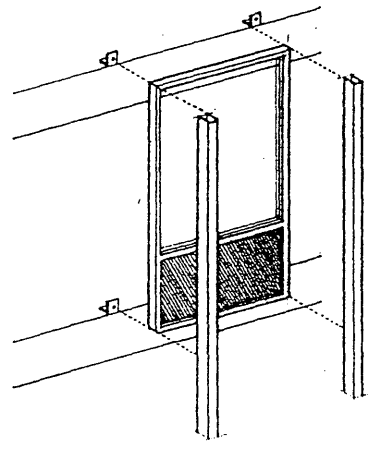
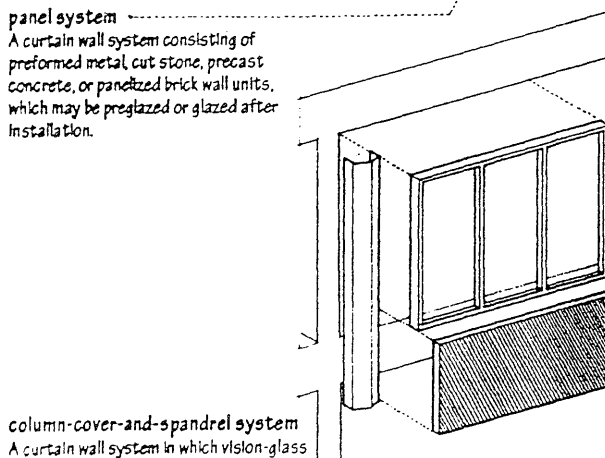
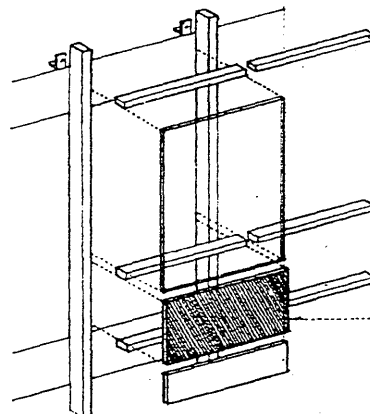
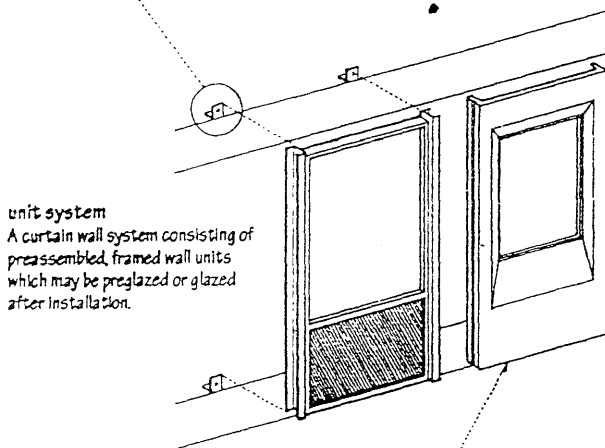
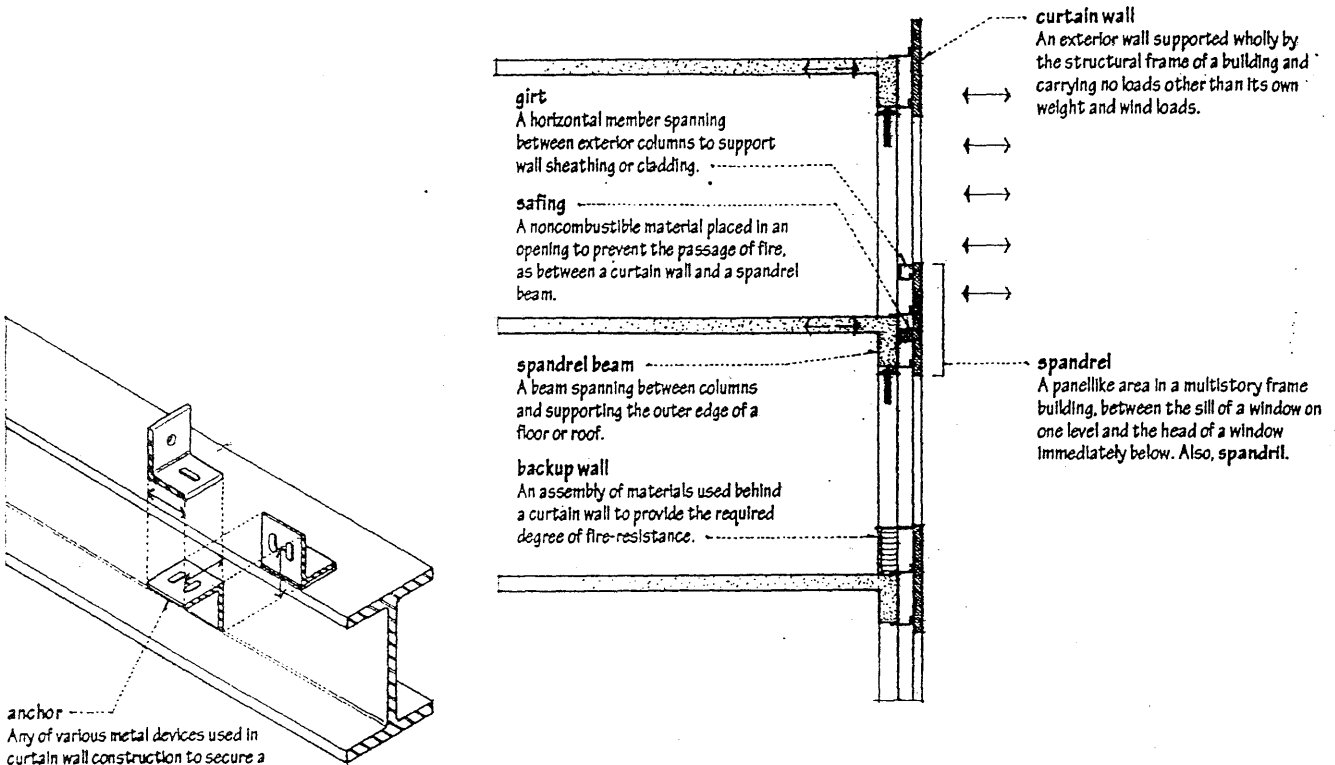
A raised molding for framing a panel, doorway, or fireplace, esp. when the meeting surfaces are at different levels. Also, bilection.



## flush panel

A panel having a surface in the same plane as the surrounding frame.

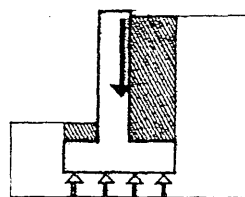
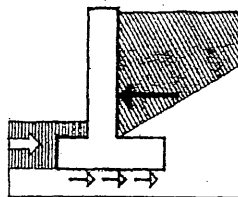
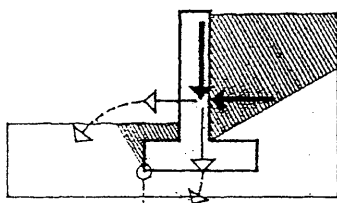




# WALL

## 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.

## toe

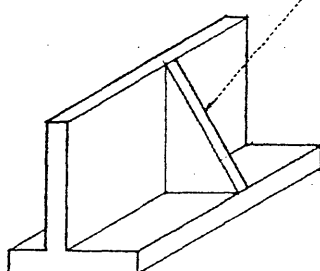
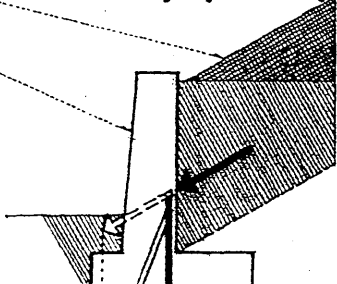
The forward, lower tip of the base of a footing or retaining wall, extended to give broader bearing and greater stability.

## counterfort

A triangular-shaped cross wall tying a concrete retaining wall to its base at regular intervals, built on the side of the material to be retained in order to stiffen the vertical slab and add weight to the base.

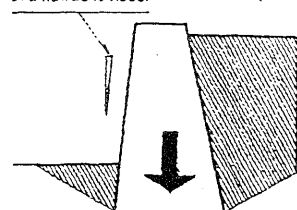
## cantilever wall

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.



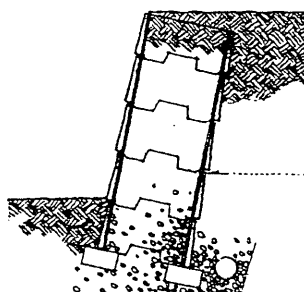
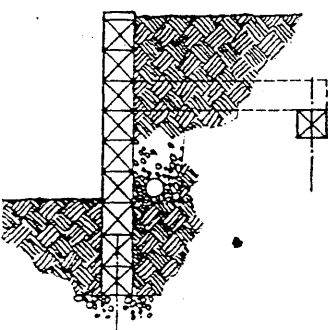
## batter

A backward slope of the face of a wall as it rises.



## deadman

A log, concrete block, or similar mass buried in the ground as an anchor.



## gravity wall

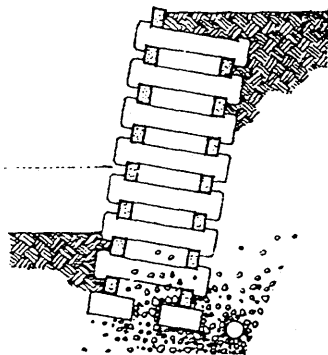
A masonry or concrete retaining wall that resists overturning and sliding by the sheer weight and volume of its mass.

## bin wall

A type of gravity retaining wall formed by stacking modular, interlocking precast concrete units and filling the voids with crushed stone or gravel. Also called cellular wall.

## cribbing

A system of cribs for retaining earth or for a building being moved or having its foundation rebuilt. Also called cribwork.

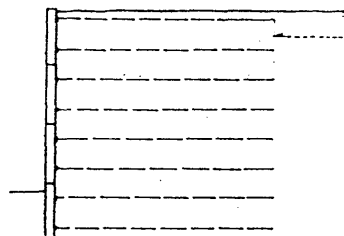


## crib

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.

## earth tieback wall

A retaining wall consisting of precast concrete panels fastened to long galvanized steel straps extending into a compacted soil backfill.



## critical height

The maximum height at which a vertical cut in a cohesive soil will stand without shoring.

## angle of repose

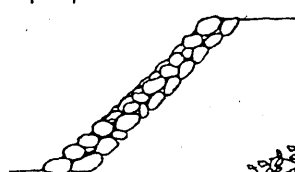
The maximum slope, measured in degrees from the horizontal, at which loose solid material will remain in place without sliding.

## angle of slide

The minimum slope, measured in degrees from the horizontal, at which loose solid material will begin to slide or flow.

## riprap

A layer of broken stones thrown together irregularly on an embankment slope to prevent erosion.



## gabion

Galvanized wire basket filled with stones and used in constructing an abutment or retaining structure.

## revet

To face a sloping surface or embankment with stone or other material.

## revetment

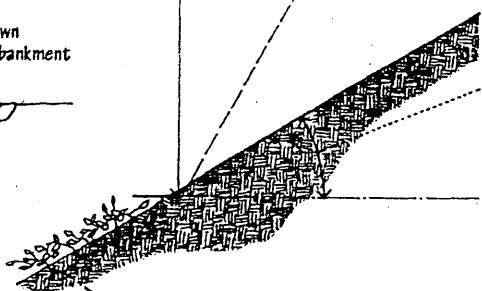
A facing of masonry or other suitable material for protecting an embankment against erosion.

## 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 unit

A manufactured assembly of a frame, sash, glazing, 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.

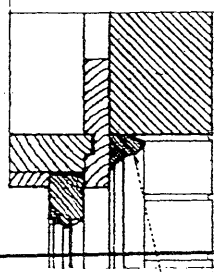
## window frame

The fixed frame of a window, consisting of two jambs, a head, and a sill.

## 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.



## brick molding

A wood molding covering the gap between a doorframe or window frame and the masonry reveal into which the frame is set. Also called staff bead.

## 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 at the top and sides of a door or window.

## windowsill

The horizontal member at the base of a window opening, esp. the ledge formed by such a member.

## wash

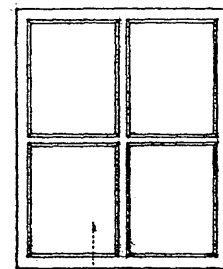
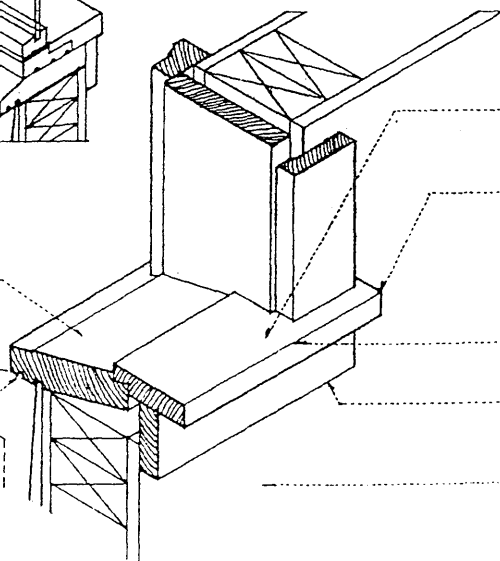
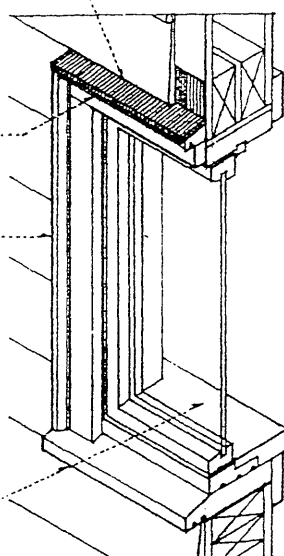
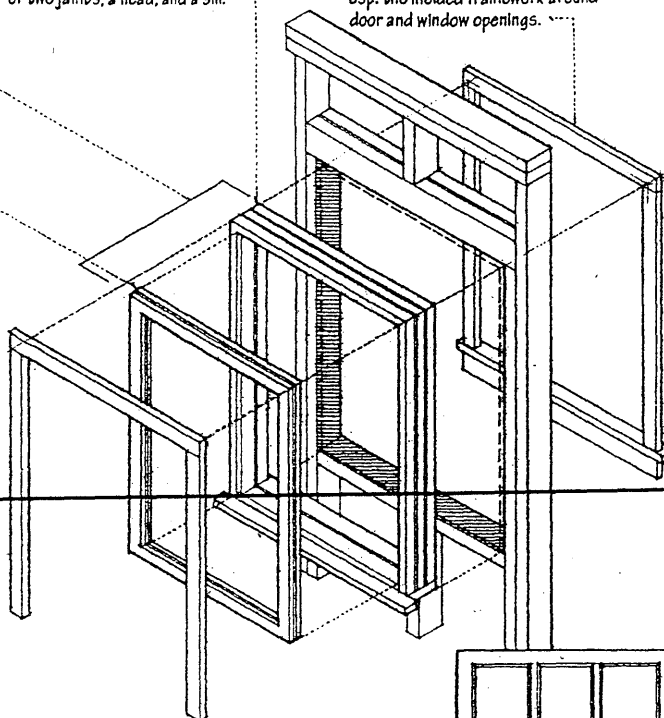
The upper surface of a building member, as a windowsill or coping, sloped to shed rainwater. Also called weathering.

## check throat

A groove cut or formed on the underside of a sill or other exterior horizontal member to prevent the capillary flow of rainwater to a wall.

## subsill

An additional sill fitted to a window frame to cause rainwater to drip farther away from a wall surface. Also called sill drip molding.



## pane

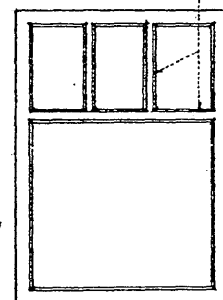
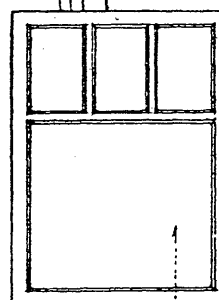
One of the divisions of a window or door, consisting of a single unit of glass set in a frame.

## windowpane

A pane of glass fitting a window sash.

## muntin

A rabbeted member for 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 jambs of a window or door opening.

## lug sill

A sill extending beyond a window or door opening and built 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 windowsill 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 paneled, 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 a different part of the window.

## hung sash

A vertically sliding window sash balanced by a counterweight or a pretensioned spring on each side so that it can be raised or lowered with relatively little effort. Also called **balanced sash**.

## 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.

## sash fast

A fastener on the meeting rail of one sash which swings across to the meeting rail of another sash and engages with a spur on it. Also called **sash fastener**.

## check rail

A meeting rail, esp. one closing against a corresponding rail with a diagonal or rabbeted overlap.

## 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

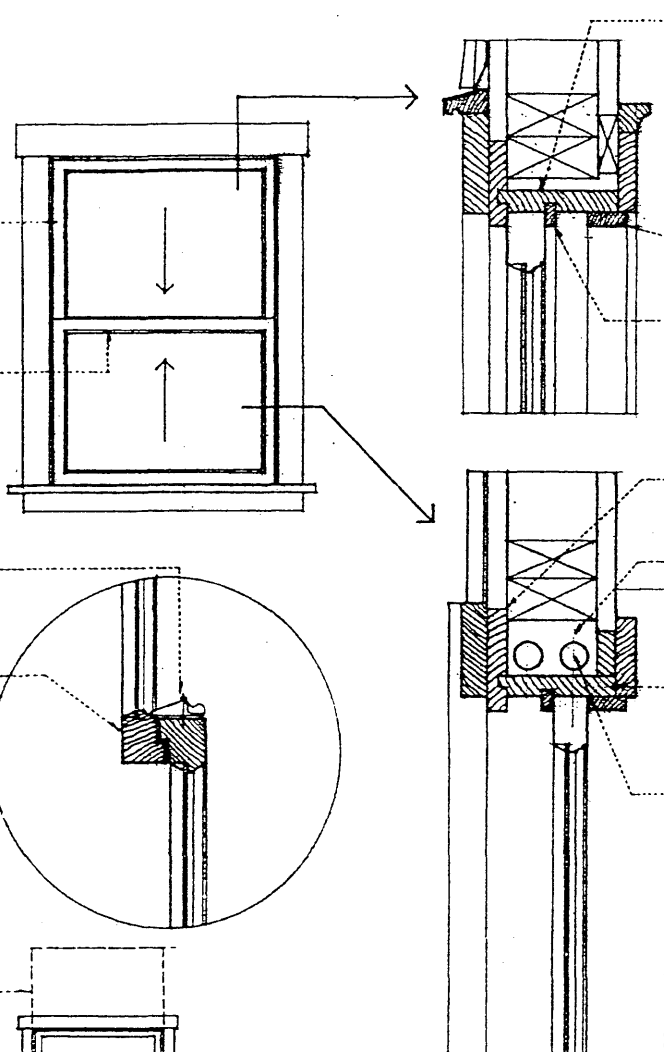
A window constructed with a pocket below the sill, into which a sash can slide to increase the opening available for ventilation.

## horizontally sliding window

A window having two or more sashes, of which at least one slides 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.



## yoke

A horizontal piece forming the top of a frame for a double-hung window.

## stop

A strip of molding along the inside of window frame for holding a sliding sash, or against which a sash closes. Also called **sash stop**, **window stop**.

## stop bead

A strip of molding along the inside of a window frame for holding a sliding sash.

## parting bead

A strip of molding used on each side of a frame of a double-hung window to keep the upper and lower sashes apart when raised or lowered. Also called **parting strip**.

## blind casing

The rough casing of a box frame to which trim is secured.

## box frame

A window frame having hollow jambs or mullions for sash weights.

## hanging stile

A stile in a window frame against which a window sash slides. Also called **pulley stile**.

## sash weight

A cylindrical casing of iron or lead used as a counterweight to balance a vertically sliding window sash.

## sash line

A rope (sash cord) or chain (sash chain) for connecting a vertically sliding window sash with a counterweight.

## sash ribbon

A strip of steel or aluminum alloy used in place of a sash cord to connect a vertically sliding window sash with a counterweight.

## pocket piece

A removable part of a hanging stile permitting access to insert a sash weight or to replace the sash line.

## 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 gearless device for operating a casement and holding it in an open position.

## cam handle

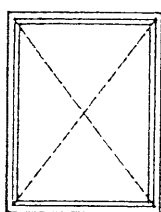
A handle that locks a hinged sash in a closed position by wedging it against a keeper plate. Also called locking handle.

## roto operator

A crank-driven worm drive for opening and closing awning windows, casement windows, and jalousies.

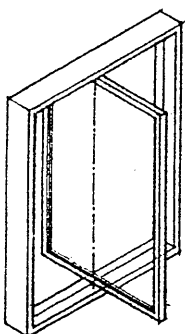
## wicket screen

A small sliding or hinged portion of a larger screen providing access for operating a window sash.



## pivoted 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

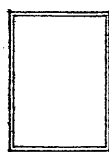
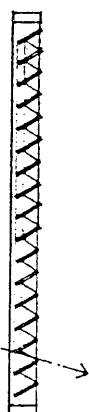
A window having horizontal glass or wood louvers which pivot simultaneously in a common frame, used primarily in mild climates to control ventilation and to cut off visibility from the outside.

## 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 having 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

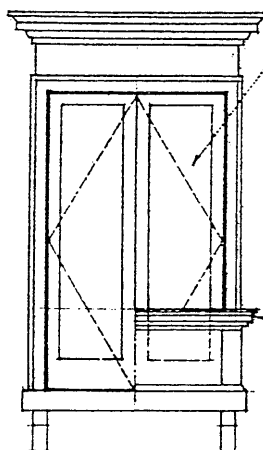
A pair of casements with rabbeted meeting stiles, hung in a frame having no mullion.

## hanging stile

The stile of a window frame from which a casement is hung.

## meeting stile

One of the abutting stiles in a pair of casement.



## French window

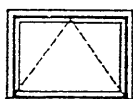
A pair of casement windows extending to the floor and serving as a doorway, esp. from a room to an outside porch or terrace.

## cremorne bolt

A vertical bolt used on a French window or the like, consisting of two rods moved by a knob mechanism and extending into pockets in the head and sill of the opening to provide a secure fastening. Also, cremone bolt.

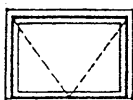
## balconet

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.



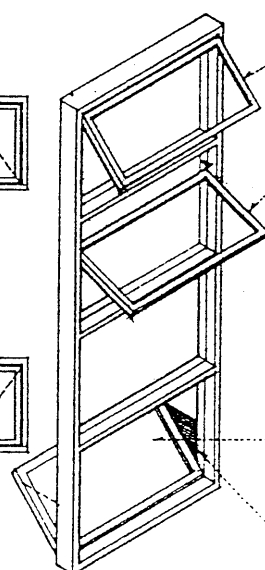
## awning window

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 on the bottom. Also called hospital window.

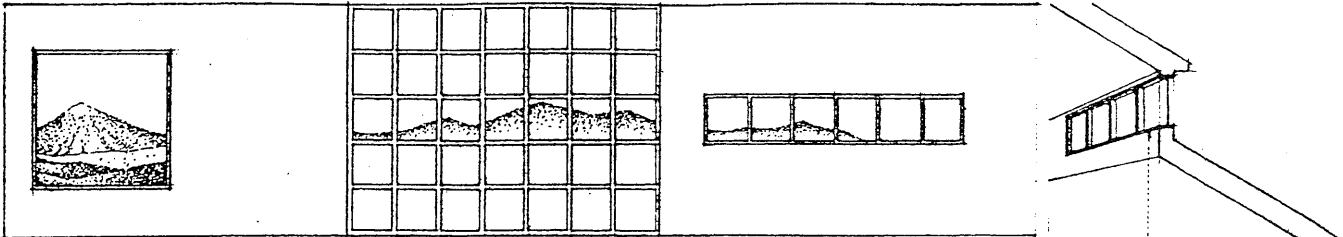
## hopper light

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.

WINDOW



**picture window**  
A large, usually fixed single-pane window, placed to frame an attractive exterior view.

**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, clearstory.

**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 bay window**  
A bay window having canted slides.

**bow window**  
A bay window having a rounded projection.

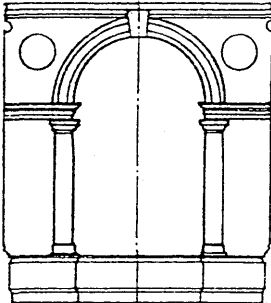
**dormer window**  
A vertical window in a projection built out from a sloping roof. Also called luthern.

**internal dormer**  
A vertical window set below the line of a sloped roof.

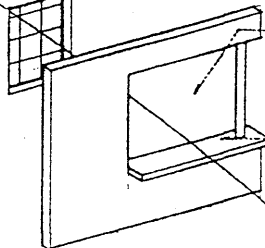
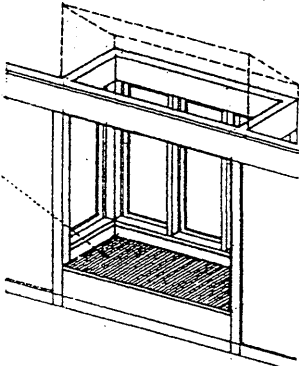
**lucarne**  
A dormer window in a roof or spire.

**oxeye**  
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.

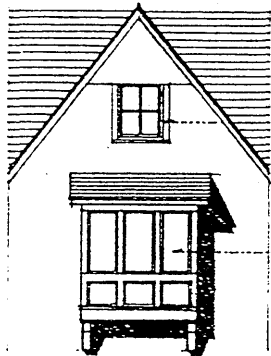


**Palladian motif**  
A window or doorway in the form of a round-headed archway flanked on either side by narrower compartments, the side compartments being capped with entablatures on which the arch of the central compartment rests. Also called Serlian motif, Venetian motif.



**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.



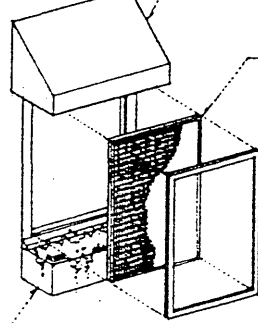
**gable window**  
A window in or under a gable.

**oriel**  
A bay window supported from below by corbels or brackets.

**meshrebeeyeh**  
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, mashrebeeyeh, mashrebeeyah.

**lychnoscope**  
A small window set low in the wall of a medieval church, permitting the interior to be seen from the outside. Also called lowside window.

**awning**  
A rooflike cover of canvas or other material extending in front of a doorway or window, or over a deck, to provide protection from the sun or rain.



**screen**  
A frame holding a fine mesh of metal or fiberglass, placed in a window or doorway, or around a porch to admit air but exclude insects.

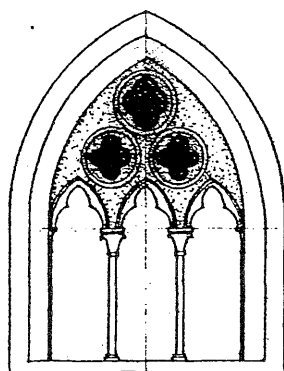
**storm window**  
A supplementary sash placed outside an existing window as additional protection against severe weather. Also called storm sash.

**combination window**  
A window equipped with interchangeable screen and glass sections for summer and winter use.

**window box**  
A box designed to hold soil for growing plants at or on a windowsill.

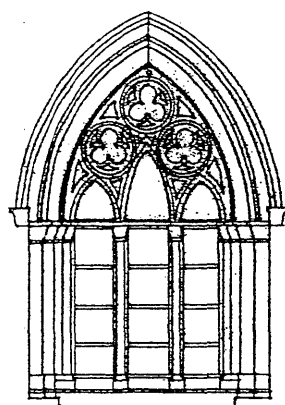
## tracery

Ornamental work of branchlike lines, esp. the lacy openwork in the upper part of a Gothic window.



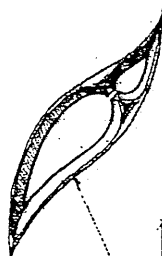
### plate tracery

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.



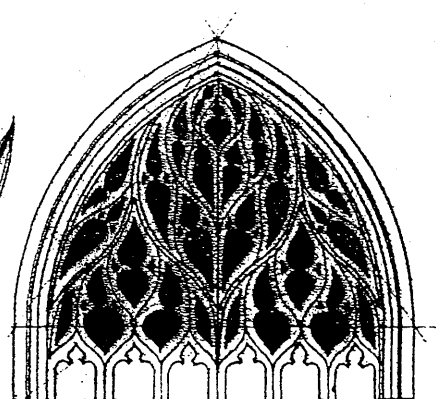
### geometric tracery

Gothic tracery characterized by a pattern of geometric shapes, as circles and foils.



### mouchette

A daggerlike motif found esp. in Gothic tracery, formed by elliptical and ogee curves.

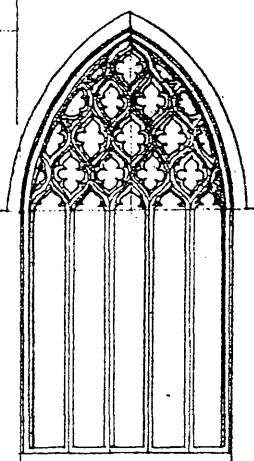


### curvilinear tracery

Gothic tracery characterized by a pattern of irregular, boldly curved forms. Also called flowing 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.

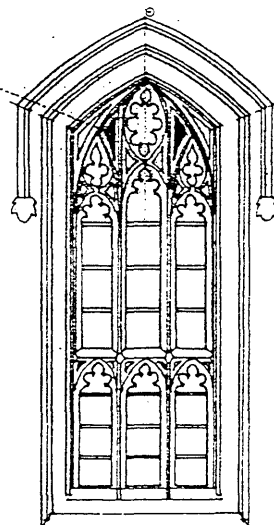


### reticulated tracery

Gothic tracery consisting mainly of a netlike arrangement of repeated geometrical figures. Also called net tracery.

### 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.

### foil

Any of several arcs or rounded spaces divided by cusps and tangent to the interior of a larger arc, as of an arch or circle.

### foliation

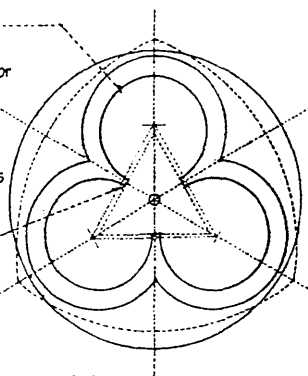
Ornamentation of an archway, window, or other opening with foils or representations of foliage.

### cusped

A pointed projection formed by two intersecting arcs, used esp. to vary the outlines of intradoses or to form foils.

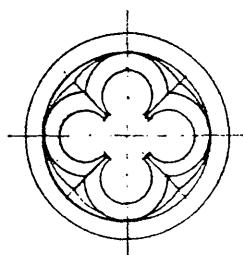
### cuspidation

Decoration with cusps.



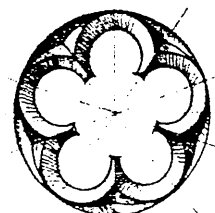
### trefoil

An arrangement of three foils divided by cusps and radiating from a common center.



### quatrefoil

An ornament composed of four foils, divided by cusps and radiating from a common center.



### cinquefoil

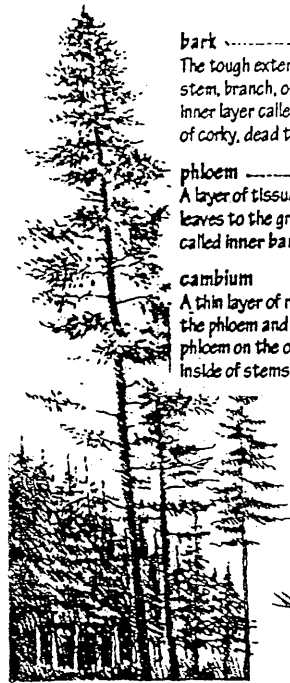
A design composed of five foils, divided by cusps and radiating from a common center.

### multifoil

Having more than five foils.

# 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.

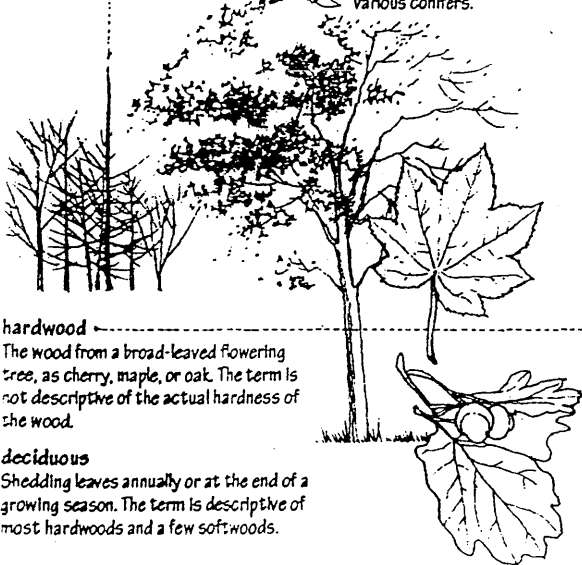
**softwood**  
The wood from a conifer. The term is not descriptive of the actual softness of the wood.

**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.

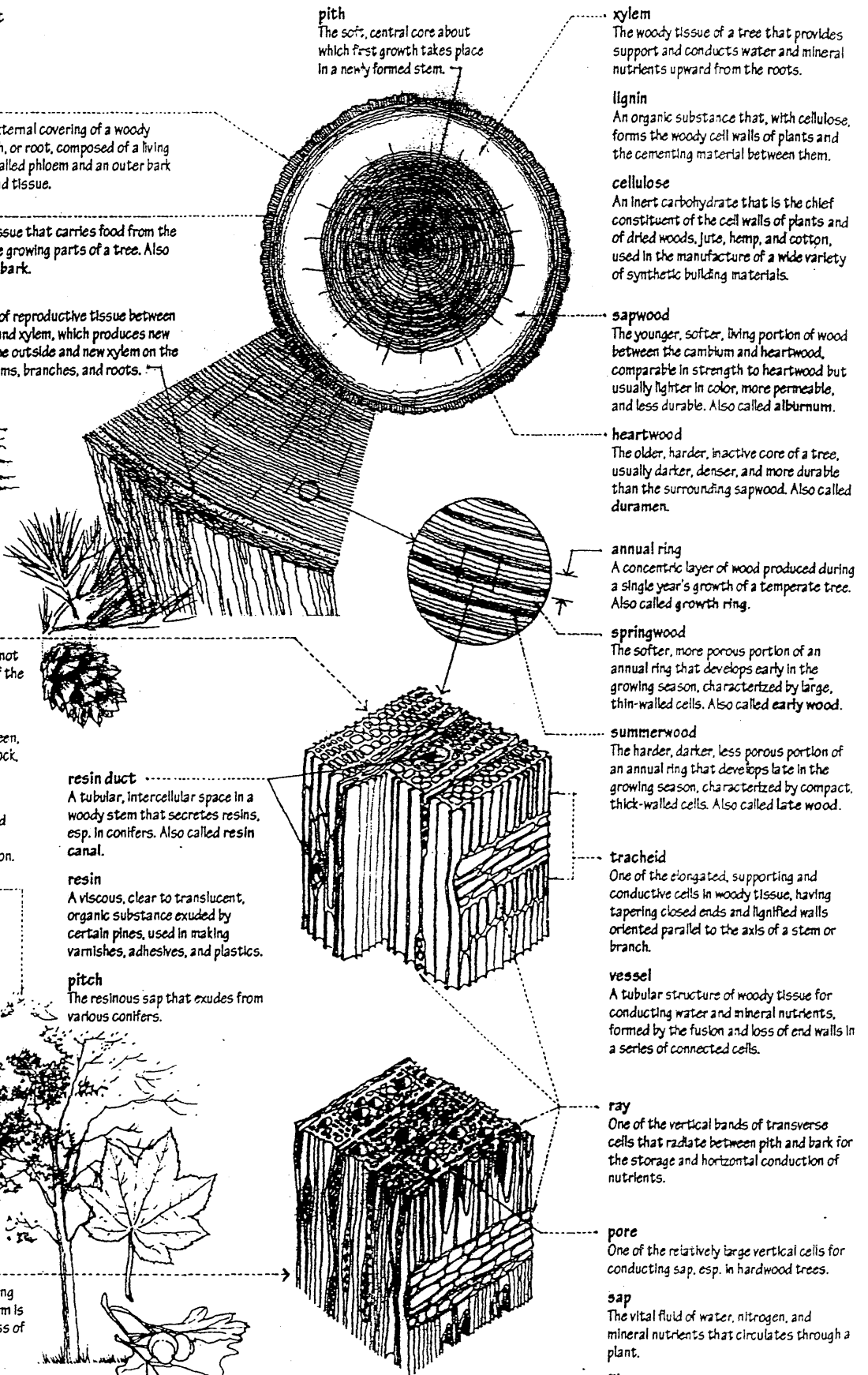
**crown**  
The leaves and living branches of a tree.

**trunk**  
The main stem of a tree apart from its branches and roots.



**hardwood**  
The wood from a broad-leaved flowering tree, as cherry, maple, or oak. The term is not descriptive of the actual hardness of the wood.

**deciduous**  
Shedding leaves annually or at the end of a growing season. The term is descriptive of most hardwoods and a few softwoods.



**pith**  
The soft, central core about which first growth takes place in a newly formed stem.

**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, darker, 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 conductive 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 the 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.

**sap**  
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.

**timber**  
Wood suitable for use as a building material.

**log**  
A length of trunk or large limb of a felled tree, ready for sawing.

**rough lumber**  
Lumber that is sawn, edged and trimmed, but not surfaced.

**dressed lumber**  
Lumber that is surfaced with a planing machine to attain a smooth surface and uniform size.

**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.

**surfaced green**  
Of or pertaining to dressed lumber having a moisture content exceeding 19% at the time of manufacture.

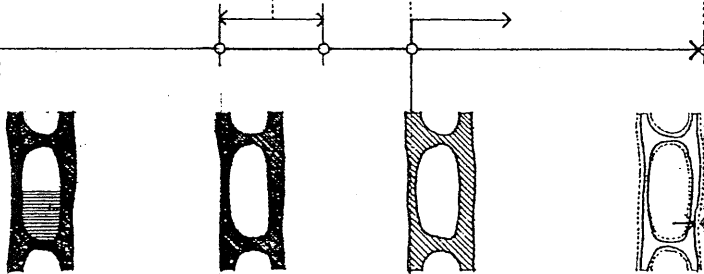
**surfaced dry**  
Of or pertaining to dressed lumber having at a moisture content of 19% or less at the time of manufacture.

**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 25% 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.

**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 214° to 221°F (101° to 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.

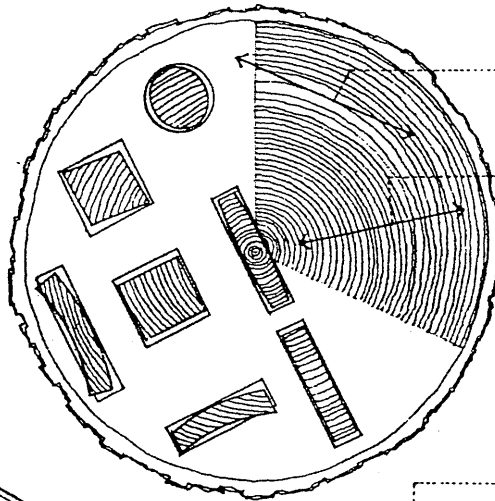
**working**  
The alternate swelling and shrinkage of seasoned wood occurring with changes in moisture content caused by changes in relative humidity of the surrounding air.

**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.

**tangential shrinkage**  
Wood shrinkage in a direction tangent to the growth rings, about double that of radial shrinkage.

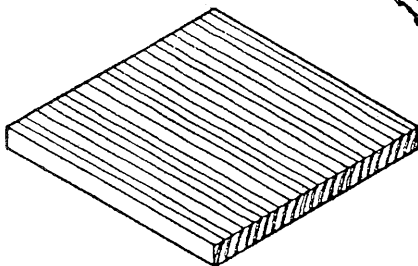
**radial shrinkage**  
Wood shrinkage perpendicular to the grain, across the growth rings.

**longitudinal shrinkage**  
Wood shrinkage parallel to the grain, about 2% of radial shrinkage.



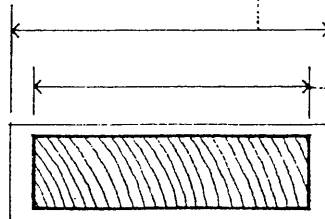
**nominal dimension**  
The dimension of lumber before drying and surfacing, used for convenience in defining size and computing quantity. Nominal dimensions are always written without inch marks. Also called nominal size.

**dressed size**  
The dimension of lumber after seasoning and surfacing, from  $\frac{3}{8}$  to  $\frac{3}{4}$  in. (9.5 to 19.1 mm) less than the nominal dimension. A dressed size is always written with inch marks ("). Also called dressed dimension.



**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.

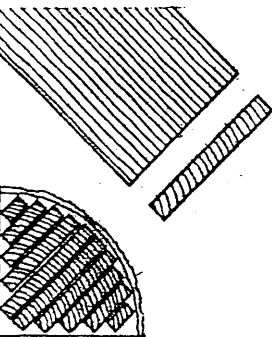
**board measure**  
Lumber measurement in board feet.



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.

**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 or 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.

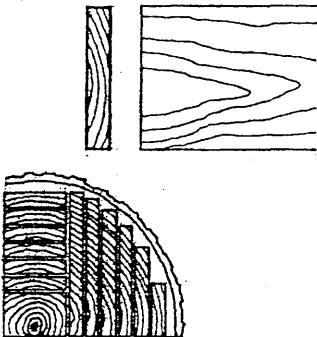
**pitch pocket**  
A well-defined opening between the annual rings of a softwood, containing or having once contained solid or liquid pitch.

**check**  
A lengthwise separation of wood across the annual rings, caused by uneven or rapid shrinkage during the seasoning process.

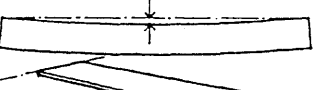
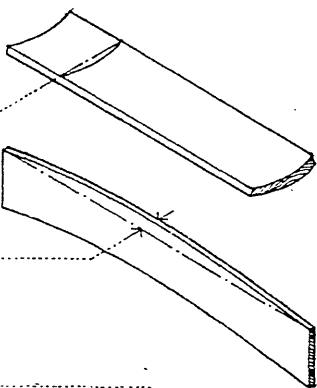
**split**  
A check that extends completely through a board or wood veneer. Also called **through check**.

**wane**  
The presence of bark or absence of wood at corner or along an edge of a piece.

**flat grain**  
Wood grain resulting from plain-sawing, having the annual rings forming an angle of less than 45° with the broad faces of a piece.



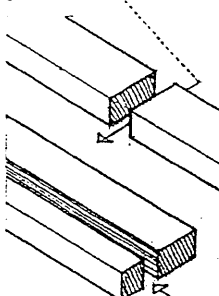
**plain-saw**  
To saw a squared log into boards with evenly spaced parallel cuts. Also called **bastard-saw**.



**mixed grain**  
Any combination of edge-grained and flat-grained lumber.

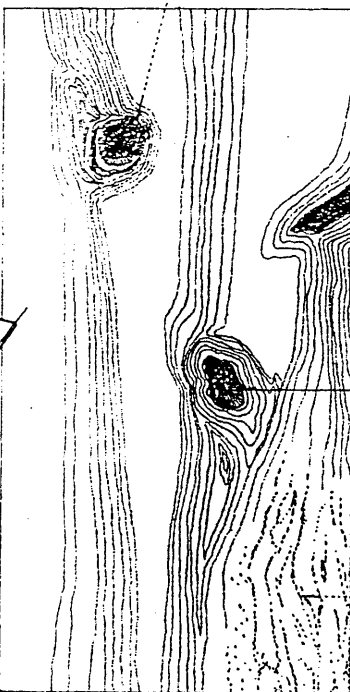
**end grain**  
Wood grain resulting from a cut across the grain.

**crosscut**  
A cut made across the grain of wood.



**rip**  
To saw wood in the direction of the grain. Also called **ripsaw**.

**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.



**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 summer wood.

**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 denser 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.

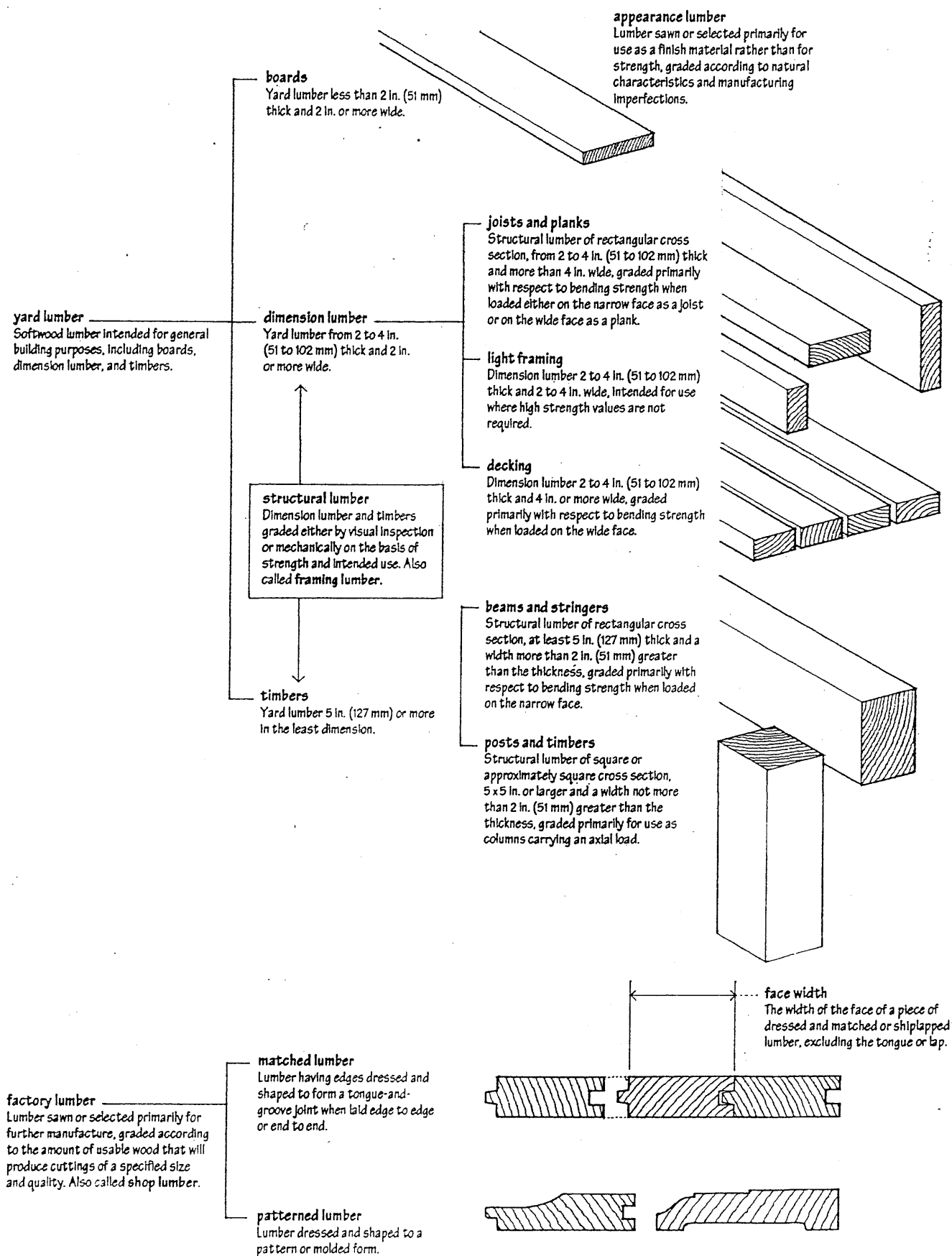
**dry rot**  
A decay of seasoned timber caused by fungi that consume the cellulose leaving a soft, brittle skeleton readily reduced to powder.

**pecky**  
Having isolated spots of incipient decay from fungi, as pecky cypress or pecky cedar.

**skip**  
An area on the surface of a board or panel missed by a planing machine.

**machine burn**  
A surface charring caused by overheating of the cutting blades or abrasive belts during shaping or finishing of a material.





# WOOD

## 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

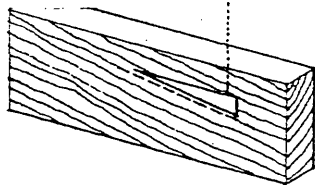
The grading of structural lumber by a machine that flexes a test specimen, measures its resistance to bending, calculates its modulus of elasticity, and electronically computes the appropriate stress grade, taking into account such factors as the effects of knots, slope of grain, growth rate, density, and moisture content. Also called **machine stress-rating**.

## grademark

A stamp applied to each piece of lumber indicating the assigned stress grade, mill of origin, moisture content at time of manufacture, species or species group, and the grading authority.

## slope of grain

The angle of grain relative to a line parallel to the length of a wood piece.

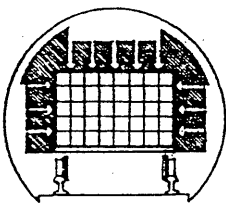


## treated wood

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.

## 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.

## MACHINE RATED

W<sup>®</sup> 12 HEM  
S-DRY FIR  
1650 Fb 1.5E

## size-adjusted value

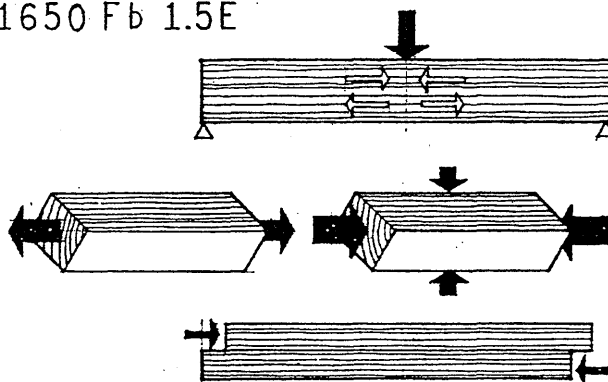
A base value for a species or group of species of structural lumber, adjusted for cross-sectional size.

## base value

Any of the allowable unit stresses for bending, compression perpendicular and parallel to grain, tension parallel to grain, horizontal shear, 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.

=

X



## full-cell process

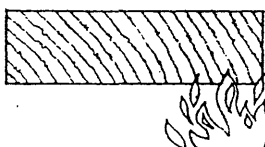
A process for pressure-treating wood in which a vacuum is first drawn to remove air from the wood fibers and allow the preservative to be absorbed by the cell walls, after which pressure is applied to force additional preservative into the cell cavities. The full-cell process leaves the maximum amount of preservative in the wood.

## empty-cell process

A process for pressure-treating wood in which the pressure of the entering preservative entraps air in the wood fibers, which expands when the pressure is released to expel excess preservative from the cell cavities. The empty-cell process yields a drier product while ensuring deep, uniform penetration of the preservative.

## vacuum process

A non-pressure treatment in which a vacuum or partial vacuum exhausts air from the cells and pores of the wood while atmospheric pressure forces preservative into the wood.



## preservative

Any of various substances for coating or impregnating wood in order to protect it against wood-destroying fungi and insects.



## 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 values of a wood member subject to a short-term load, since wood has the property of carrying substantially greater maximum loads for short durations than for long durations of loading.

## horizontal shear factor

A coefficient for increasing the size-adjusted horizontal shear value of a wood member having shakes, checks, or splits when their length is known and any increase in length is not anticipated.

## flat 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.

## water-borne preservative

An inorganic, water-soluble compound, as ammoniacal copper arsenite (ACA) or chromated copper arsenite (CCA), used as a wood preservative. ACA and CCA affix 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 ACA and CCA is odorless and paintable.

## oil-borne preservative

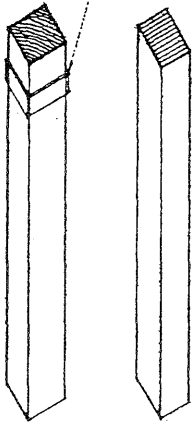
An organic chemical dissolved in a petroleum oil carrier, as pentachlorophenol or copper naphthenate, used as a wood preservative. Pentachlorophenol, the most commonly used oil-borne preservative, has a persistent odor, is insoluble in water, and is highly toxic not only to fungi and insects but also to humans and plants.

## creosote

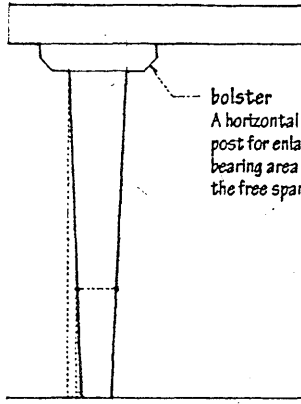
An oily liquid of aromatic hydrocarbons obtained by the distillation of coal tar, used as a wood preservative for marine installations or for severe exposures to wood-destroying fungi and insects. Creosote and creosote solutions have a penetrating odor and render wood unpaintable.

**ferrule**

A metal ring or cap placed around the end of a wooden post or handle to prevent splitting.

**bracket load**

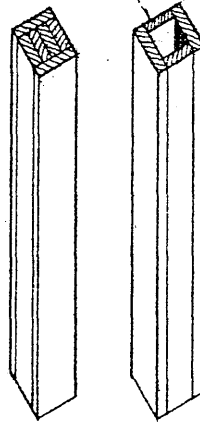
An eccentric load applied at some point below the upper end of a timber column, the static effect of which is assumed to be equivalent to the same load applied axially plus an additional side load applied at midheight.

**bolster**

A horizontal timber on a post for enlarging the bearing area and reducing the free span of a beam.

**box column**

A built-up column having a hollow, square or rectangular cross section.

**solid column**

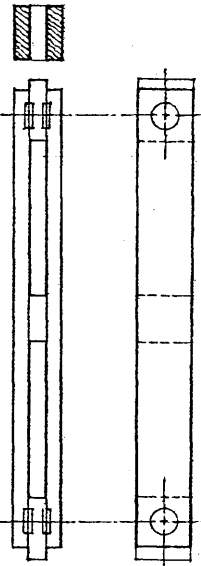
A wood column consisting of a single piece of solid-sawn or glued-laminated timber, usually square or rectangular in cross section.

**tapered column**

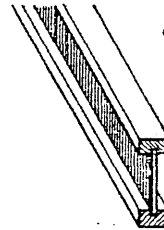
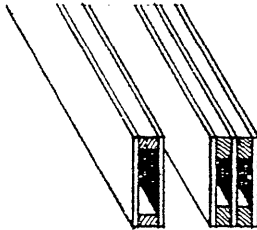
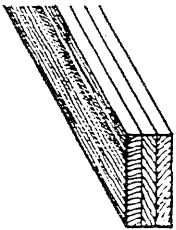
A wood column having a cross section that diminishes along its length. In determining the slenderness ratio for a tapered column, the least dimension is taken as the sum of the minimum diameter or least dimension and one-third the difference between the minimum and maximum diameters or lesser and greater dimensions.

**built-up column**

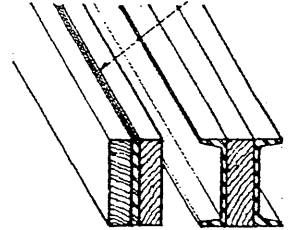
A wood column formed by fastening or gluing cover plates to two or more parallel planks, or boxing planks around a solid core. A built-up column is never equal in strength to a solid column of comparable material and overall dimensions.

**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.

**flitchplate**

A steel plate for reinforcing a flitch beam.

**built-up beam**

A vertically laminated wood beam made by fastening together two or more smaller members with bolts, lag screws, or spikes, equal in strength to the sum of the strengths of the individual pieces if none of the laminations are spliced.

**box beam**

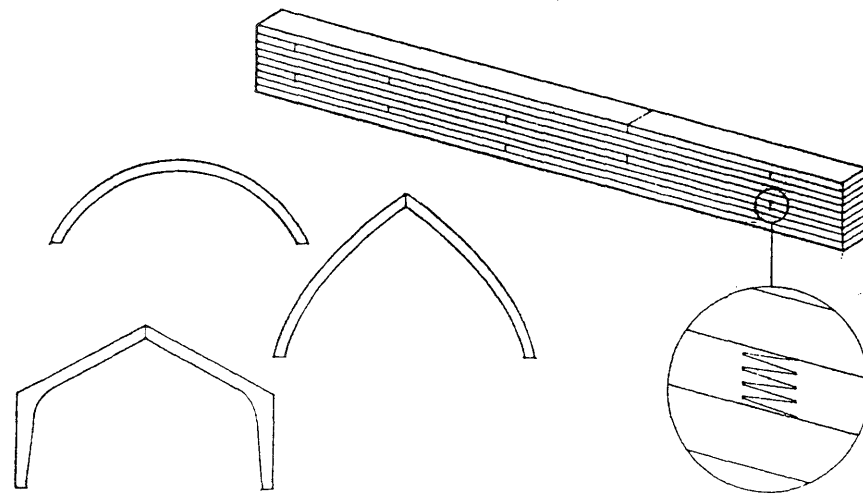
A beam having a hollow, rectangular cross section, made by gluing two or more plywood or oriented strandboard webs to sawn or laminated veneer lumber flanges.

**I-beam**

A beam made by gluing sawn or laminated veneer lumber flanges along the top and bottom edges of a single plywood or oriented strandboard web. Also called I-joist.

**flitch beam**

A vertically laminated beam consisting of timbers set on edge and bolted side by side to steel plates or sections. Also called flitch girder, sandwich beam.



examples of glue-laminated timber shapes

**glued-laminated timber**

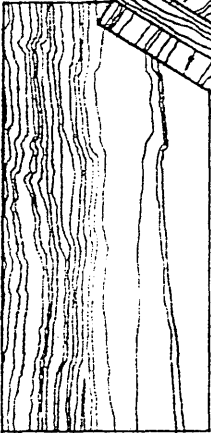
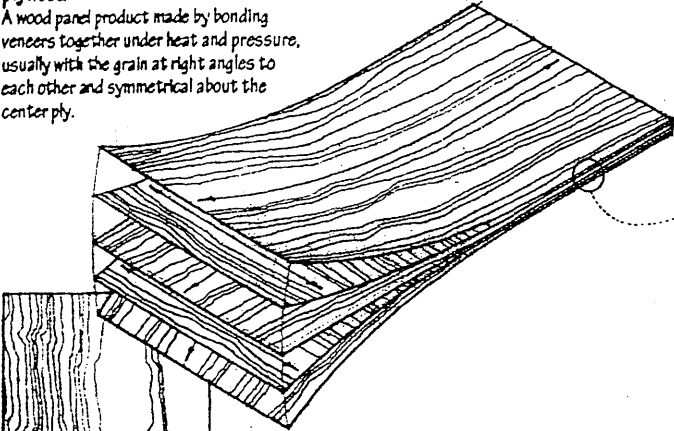
A structural lumber product made by laminating stress-grade lumber with adhesive under controlled conditions, usually with the grain of all plies being parallel. The advantages of glued-laminated timber over dimension lumber are generally higher allowable unit stresses, improved appearance, and availability of various sectional shapes. Glue-laminated timbers may be end-joined 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 ply.



**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.

**texture 1-11**  
An exterior plywood panel having grooves 1/4 in. (6.4 mm) deep and 3/8 in. (9.5 mm) wide, spaced 4 or 8 in. (102 or 203 mm) on center.

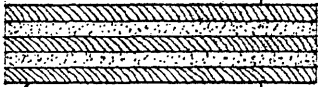
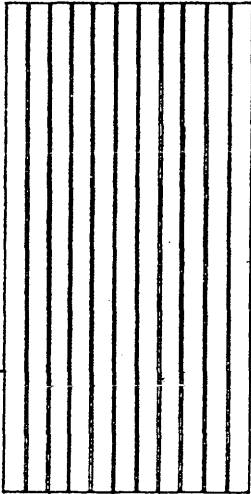
**span rating**  
A number specifying the maximum recommended center-to-center spacing in inches of the supports for a structural wood panel spanning with its long dimension across three or more supports.

**exposure durability**  
A classification of a wood panel product according to its ability to withstand exposure to weather or moisture without weakening or warping.

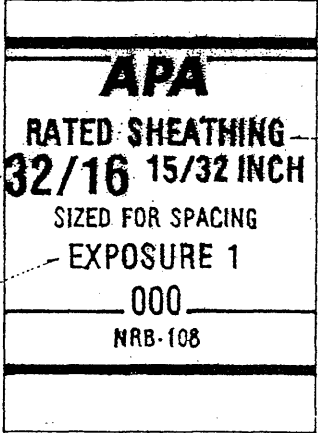
**exterior**  
An exposure durability classification for structural wood panels manufactured with a waterproof glue for use as siding or other continuously exposed applications.

**exposure 1**  
An exposure durability classification for structural wood panels manufactured with an exterior glue for use in protected construction subject to repeated wetting.

**exposure 2**  
An exposure durability classification for structural wood panels manufactured with an intermediate glue for use in fully protected construction subject to a minimum of wetting.



**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.



**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.

**gradestamp**  
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.

**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.

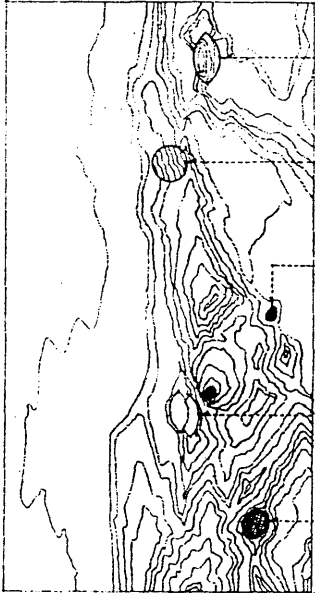
**A-grade**  
A smooth, paintable softwood veneer with a limited number of neatly made repairs parallel to the grain.

**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 discoloration 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 burls, 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**

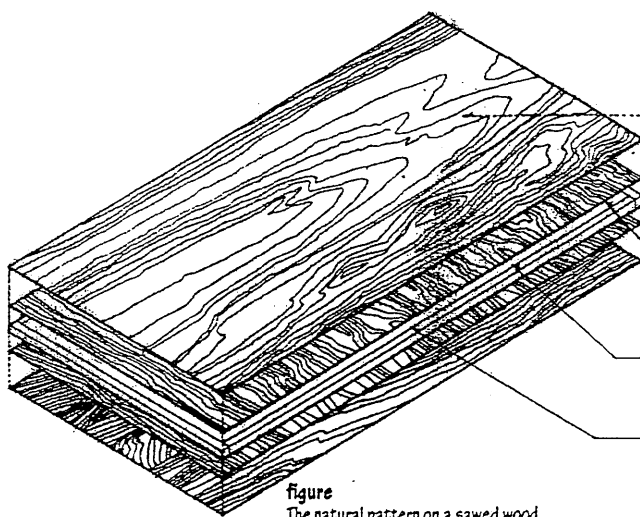
A sound, smooth hardwood veneer free of open defects but containing streaks, discoloration, patches, and small sound tight knots.

**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.

**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 sawn 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 in 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**

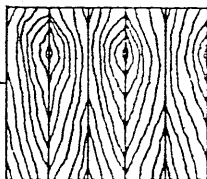
The natural pattern on a sawed wood surface produced by the intersection of annual rings, knots, burls, rays, and other growth characteristics.

**matching**

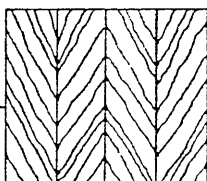
Arranging sheets of veneers so as to emphasize the color and figure of the wood.

**book matching**

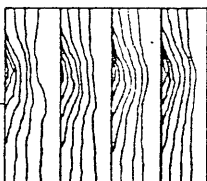
Arranging veneers from the same flitch alternately face up and face down to produce symmetrical mirror images about the joints between adjacent sheets.

**herringbone matching**

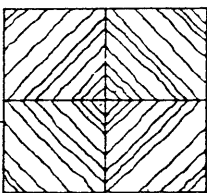
Book matching in which the figures in adjacent sheets slope in opposite directions.

**slip matching**

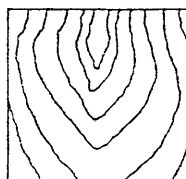
Arranging adjacent sheets of veneer from the same flitch side by side without turning so as to repeat the figure.

**diamond matching**

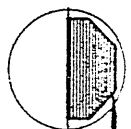
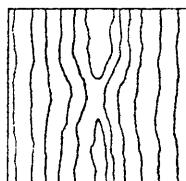
Arranging four diagonally cut sheets of a veneer to form a diamond pattern about a center.

**random matching**

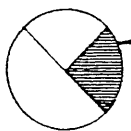
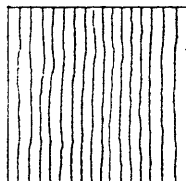
Arranging veneers to intentionally create a casual, unmatched appearance.

**rotary cutting**

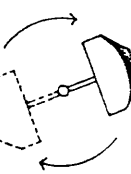
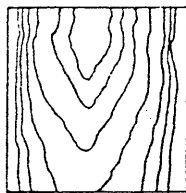
The rotating of a log against the cutting edge of a knife in a lathe, producing a continuous veneer with a bold, variegated ripple figure.

**flat slicing**

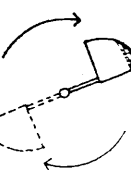
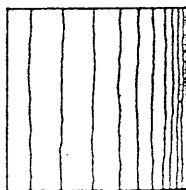
The longitudinal slicing of a half-log parallel to a line through its center, producing a veneer having a variegated wavy figure. Also called plain slicing.

**quarter slicing**

The longitudinal slicing of a quarter log perpendicular to the annual rings, producing a series of straight or varied stripes in the veneer.

**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.

**flitch**

A longitudinal section of a log to be cut into veneers.

**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 nonveneered 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 nonveneered 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 nonveneered 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, Parallam, 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.

### hardboard

A very dense, compressed wood fiberboard.

### tempered hardboard

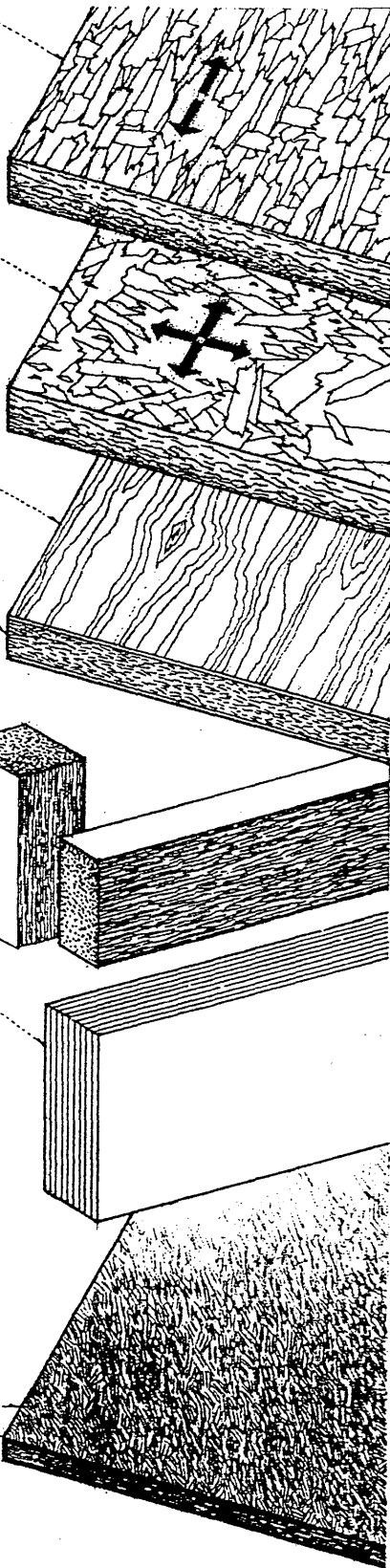
A hardboard impregnated with a drying oil or other oxidizing resin and baked to improve its hardness and moisture resistance.

### 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.



## Aa

- Aaron's rod 185
- abacus 180
- Abram's law 44
- abrasion resistance 165
- abrasion-resistance index 165
- abscissa 108
- absolute humidity 120
- absolute scale 117
- absolute temperature 117
- absolute zero 117
- absorber 124
- absorbing well 223
- absorptance 143
- absorption 18, 160, 165, 231
- absorption bed 201
- absorption coefficient 231
- absorption field 201
- absorption refrigeration 124
- absorption trench 201
- absorption unit 231
- abstract 52, 59
- abstract expressionism 135
- A bulb 144
- abutment 13, 206
- Abyssinian well 221
- acanthus 181
- accelerated aging 165
- accelerated weathering 165
- acceleration of gravity 167
- accelerator 43
- accent lighting 148
- access 57
- access flooring system 93
- accident 59
- acclimatize 277
- accommodation 264
- accordion door 62
- accouplement 179
- achromatic 39
- acorn nut 84
- acoustical analysis 230
- acoustical ceiling 31
- acoustical cloud 230
- acoustical design 230
- acoustical door 65
- acoustical plaster 188
- acoustical tile 31
- acoustical treatment 230
- acoustic decking 93
- acoustic mass 232
- acoustics 230
- acre 166
- acropolis 250
- acroterium 250
- acroterion 250
- acrylic resin 192
- acrylonitrile-butadiene-styrene 192
- act curtain 257
- act drop 257
- actinic ray 187
- action 58
- active earth pressure 100
- active leaf 62
- active solar-heating system 226
- acute 109
- acute angle 108
- adaptation 148
- additive 43, 52
- additive color 38
- address 59
- adhered veneer 156
- adiabatic cooling 120
- adiabatic heating 120
- adjacent spaces 218
- adjustable doorframe 65
- adjustable tie 156
- admixture 43
- adobe 34
- adsorption 165
- advancing color 39
- aerator 197
- aerial perspective 72
- aerodynamic damping 245
- aerodynamic oscillation 154
- aesthetics 10
- A-frame 104
- aggregate 43
- agitator truck 46
- agora 250
- A-grade 282
- agreement 54
- airborne sound 230
- air chamber 198
- air change 127
- air conditioner 124
- air conditioning 124
- air curtain 62
- air cushion 198
- air-dried 277

- air duct 122
- air-entraining agent 43
- air-entraining portland cement 42
- air gap 198
- air-handling unit 125
- air-inflated structure 168
- air mile 166
- air-supported structure 168
- air switch 79
- air terminal 77
- air trap 198
- air-water system 126
- airway 119
- aisle 35, 257
- alabaster 188
- albarium 189
- albronze 175
- albumum 276
- alcid 175
- alcove 216
- alidade 247
- aligning punch 86
- alignment 54
- alignment valve 199
- alkyd paint 187
- alkyd resin 187
- all-air system 126
- allée 27
- Allen head 83
- allowable bearing capacity 100
- allowable bearing pressure 100
- allowable load 240
- allowable pile load 102
- allowable soil pressure 100
- allowable stress 164
- allowable stress design 240
- allowable unit stress 164
- alloy 170
- alloy steel 170
- allure 37
- all-water system 126
- almemar 250
- alpha-beta brass 175
- altar 35, 250
- alternating current 75
- alternative 58
- alternator 75
- altitude 109, 226
- alto-relievo 182
- alumina 175
- aluminum 175
- aluminum brass 175
- aluminum bronze 175
- aluminum oxide 175
- alure 37
- amalaka 253
- ambiance 217
- ambient sound 231
- ambiguity 59
- ambo 35
- ambon 35
- ambulatory 35, 37
- amenity 58
- American bond 20
- American standard beam 172
- American standard channel 172
- Americans with Disabilities Act 51
- amorphous 161
- amortizement 262
- amperage 74
- ampere 74
- amphiprostyle 251
- amphitheater 256
- amplitude 152, 228
- anaglyph 182
- analogous color 39
- analogy 59
- analysis 58
- analytical drawing 66
- analytique 67
- anamorphosis 73
- Anatolia 128
- anchor 65, 206, 269
- anchorage 202, 206, 242
- anchor bolt 267
- anchored veneer 156
- ancon 186
- ang 254
- angel light 275
- angle 108, 172
- angle bead 190
- angle cleat 174
- angle clip 174
- angle iron 172
- angle joint 140
- angle of incidence 143
- angle of reflection 143
- angle of refraction 143
- angle of repose 270
- angle of slide 270
- angle tile 214
- angle valve 199
- Anglo-Saxon architecture 131
- angstrom 142
- anhydrous 188
- animated 217
- anion 161
- anisotropic 162
- anneal 169
- annealed glass 112
- annual ring 276
- annular vault 263
- annulet 180
- annunciator 81
- anode 74
- anodize 171
- anomaly 54
- anse de panier 14
- anta 251
- antefix 250
- anteroom 216
- anthemion 184
- anthropology 11
- anthropometry 57
- anthropomorphize 57
- antic 183
- anticlastic 219
- anticorrosive paint 187
- anticum 250
- antimony 175
- anti-scald faucet 197
- anvil 102
- apartment building 139
- apartment house 139
- apophyge 181
- apophysis 181
- apothem 109
- appearance grade 281
- appearance lumber 279
- apprentice 208
- appliance circuit 77
- applied force 97
- appliqué 182
- apron 257, 271
- apron piece 235
- apse 35
- apsis 35
- apteral 251
- aquifer 196
- arabesque 184
- arabesque 179
- arbor 27
- arc 86, 110
- arcade 36
- arcature 36
- arc-boutant 262
- arc doubleau 263
- arch 12
- arch action 13
- arch axis 13
- arch brace 210
- arch corner bead 190
- archetype 59
- arching 100
- architect 48
- architectonics 11
- architectural bronze 175
- architectural concrete 47
- architectural hardware 114
- architectural terra cotta 34
- architecture 9
- architrave 179, 186
- archivolt 12
- arch order 251
- arcuate 36, 106
- arc welding 86
- are 166
- area 166
- area drain 223
- area of refuge 91
- area plan 69
- area source 147
- areaway 23
- arena theater 257
- areostyle 179
- ark of the covenant 250
- armature 75
- armored cable 78
- arris 185
- arris fillet 214
- arris gutter 209
- arris tile 214
- art 10
- Art Deco 135
- artesian well 196



- articulate 141
- artificial horizon 247
- artificial sky 150
- articulation 52
- Art Nouveau 134
- Arts and Crafts Movement 134
- A/SB bulb 144
- ashlar 158
- ashpit 87
- ashpit door 87
- aspect 59, 264
- aspect ratio 109
- asphalt 215
- asphalt mastic 176
- asphalt shingle 212
- Assyrian architecture 129
- astragal 62, 185
- asymptote 110
- atlas 250
- atmosphere 167
- atmospheric pressure 167
- atom 161
- atomic number 161
- atomic weight 161
- atrium 26, 35, 137
- attenuation 230
- Atterberg limits 225
- attic 23
- Attic base 181
- attic ventilator 127
- audio frequency 229
- auditorium 258
- auditory fatigue 229
- aureole 183
- ~~automatic closing fire assembly 89~~
- automatic door 62
- automatic door bottom 114
- automatic fire extinguishing system 90
- autumnal equinox 226
- auxiliary rafter 210
- avant-garde 135
- average transmission loss 232
- award 49
- awning 274
- awning window 273
- axial force 162
- axial load 162
- axial stress 162
- axis 55
- axis of abscissas 108
- axis of ordinates 108
- axis of symmetry 55
- axonometric 71
- axonometric projection 71
- azimuth 246
- ~~Aztec architecture 132~~
- Bb**
- back 271
- backband 271
- backbend 65
- backcheck 114
- backfill 222
- backflap hinge 115
- backflow 198
- backflow valve 198
- background 265
- background noise 231
- background noise level 231
- back hearth 87
- backing 95, 156, 211, 267
- backing board 191
- backing grade 283
- backlight 148
- back plaster 156
- backset 116
- ~~back-siphonage 198~~
- backsplash 198
- backstage 258
- backup rod 178
- backup wall 269
- back vent 200
- backwater valve 198
- baffle 146
- baguette 185
- bailey 98
- Bakelite 193
- balance 55
- balanced door 62
- balanced sash 272
- balanced section 202
- balanced step 234
- balconet 273
- balcony 24, 258
- baldachin 35
- baldaquin 35
- ballast 145
- ball-bearing hinge 115
- ball cock 198
- ballflower 183
- balloon frame 267
- baluster 235
- balustrade 235
- band 228
- bandage 61
- banderole 184
- banding 283
- bandrole 184
- banister 235
- bank 80
- baptism 35
- baptistery 35
- bar 172
- barbacan 99
- bargeboard 211
- barge couple 211
- barge course 214
- bar joist 173
- bark 276
- barometer 167
- barometric pressure 167
- Baroque architecture 133
- barrel roof 208
- ~~barrel shell 218~~
- barrel vault 263
- barrier-free 57
- barrow 248
- bartizan 99
- bartracery 275
- base 109, 153, 179
- base anchor 65
- baseboard 186
- baseboard heater 123
- basecoat 187, 188
- base flashing 177
- base isolation 245
- baseline 72, 246, 247
- basement 23
- basement wall 266
- base metal 86, 170
- base molding 186
- base plate 174
- base screed 190
- base shear 153
- base shear coefficient 153
- base sheet 215
- base shoe 186
- base value 280
- basic wind speed 154
- basilica 35, 251
- basket-handle arch 14
- bas-relief 182
- basso-relievo 182
- bastard pointing 155
- bastard-saw 278
- bastion 98
- bat 19
- bathtub 198
- batted surface 237
- batten 214, 257, 268
- batten door 64
- batten seam 214
- batter 270
- batter board 221
- batter pile 102
- battery 74, 200
- batt insulation 119
- battlement 99
- Bauhaus 135
- bauxite 175
- bay 24, 239
- Bayer process 175
- bay window 274
- B bulb 144
- bead 86, 178, 185, 214
- bead and reel 185
- bead molding 28
- beak 185
- beam 15, 149
- beam-and-girder slab 204
- beam ceiling 30
- beam fill 93
- beam pocket 93
- beams and stringers 279
- beam seat 85
- beam spread 149
- bearing 241, 246
- bearing stiffener 173
- bearing stratum 102
- bearing stress 241
- bearing wall 266
- bearing wall system 244
- beauty 10
- Beaux Arts architecture 132
- bed 155

- bedding 113  
bedding plane 237  
bed joint 155  
bed molding 179  
bedrock 224  
beehive tomb 248  
behavioral science 11  
Belfast truss 261  
Belgian 261  
bell 103, 181, 199  
bell-and-spligot 199  
bell arch 14  
bell bucket 103  
below grade 222  
belt course 159  
belvedere 27  
bema 35, 250  
bench mark 247  
bench terrace 222  
bending 163  
bending member 238  
bending moment 15  
bending stress 15  
bent 105  
bent approach 255  
bent bar 203  
bentonite 224  
berm 98, 227  
Bernoulli equation 154  
Bernoulli's theorem 154  
béton armé 202  
béton brut 47  
bevel 116, 141  
bevel siding 268  
B-grade 282  
bidding 49  
bidet 198  
~~bidet door 62~~  
bifurcation 40  
bilateral symmetry 55  
bilection 268  
bi-level 138  
~~bi-level 169, 185~~  
bimain 250  
bimetallic element 121  
binder 107, 158, 187  
binding beam 107  
binding rafter 210  
binocular vision 264  
bin wall 270  
bird's-beak 185  
bird's-mouth 211  
biscuit 32  
bisque 32  
bisque-fired 32  
bit 116  
bite 113  
bitumen 215  
black label 213  
blackplate 172  
blank 169  
~~blanket insulation 119~~  
blank jamb 63  
blast furnace 170  
blast-furnace slag 170
- bleeder 123  
bleeder valve 123  
bleeding 46  
blind 24  
blind arcade 36  
blind casing 272  
blind door 64  
blind floor 92  
blinding glare 148  
blind mortise 141  
blind-nail 82  
blind row 257  
blindstory 24  
blind wall 266  
block 26  
block flooring 94  
blocking 267  
bloom 169  
blooming mill 169  
blow 221  
blower 125  
blow molding 192  
blue label 213  
bluestone 236  
board and batten 268  
board foot 277  
boarding 268  
board measure 277  
boards 279  
boasted surface 237  
BOCA National Building Code 51  
body 32, 111  
boil 221  
boiler 123  
bolection 268  
bolster 12, 45, 281  
bolt 84, 116  
boltel 185  
bond 20, 157, 161, 202  
bond beam 160  
bond-beam block 160  
bond breaker 178  
bond coat 33  
bond course 20  
bonded 48  
bonded posttensioning 207  
bonded terrazzo 94  
bonderize 171  
bond face 178  
bonding agent 94, 190  
bonding layer 204  
bond plaster 188  
bondstone 158  
bond stress 202  
bonnet 87, 122, 199  
bonnet tile 214  
book matching 283  
boot 122  
border 257  
borrowed light 274  
borrow pit 222  
boss 159, 263  
Boston hip 213  
Boston ridge 213  
bottom bar 203
- bottom car clearance 80  
bottom rail 64  
boulder 224  
boundary cable 29  
boutil 185  
bow 278  
bower 99  
Bow's notation 260  
bowstring truss 261  
bowtel 185  
bow window 274  
box beam 281  
box column 174, 281  
box cornice 213  
box culvert 223  
boxed frame 272  
box girder 173  
box gutter 209  
box-head window 272  
box nail 82  
box office 258  
box sill 267  
box stair 235  
box strike 116  
Boyle's law 167  
brace 243  
braced core 245  
braced frame 104, 107, 243  
braced tube 245  
brace molding 185  
bracket 210, 235  
bracket load 281  
brad 82  
branch 197  
branch circuit 77  
branch drain 200  
branch interval 200  
branch vent 200  
brass 175  
brattice 99  
brazo 86  
breakdown voltage 78  
~~breakdown 78~~  
break joints 212  
break line 68  
breast beam 107  
breastsummer 107  
breast timber 45  
breast wall 270  
breezeway 138  
brick 18  
brick grade 18  
brick molding 271  
brick type 18  
brickwork 20  
bridge 257  
bridge lamp 147  
bridging 92  
bride joint 141  
brightness 38, 142  
brightness ratio 148  
brilliant 38  
Brinell number 165  
brise-soleil 227  
British thermal unit 117

- brittleness 164
- broken pediment 186
- broken rangework 158
- bronze 175
- Bronze Age 128
- broom finish 47
- brown coat 188
- brownstone 139, 236
- brush 75
- ~~brush 135~~
- BT bulb 145
- buck 63
- bucket trap 123
- buckling 40
- buckling load 40
- Buddha 253
- Buddhism 253
- Buffalo box 196
- buffer 80
- buggy 46
- bugle head 83
- building 21
- building brick 18
- building code 51
- building drain 200
- building official 49
- building paper 268
- building permit 49
- building separation 153
- building sewer 200
- building stone 237
- building storm drain 223
- building storm sewer 223
- building trap 200
- building type factor 153
- built-up beam 281
- built-up column 174, 281
- built-up roofing 215
- bulb 103, 144
- bulk-active structure 238
- bulkhead 23, 45, 80
- bulking 165
- bulk modulus 162
- bull float 47
- bullnose 185
- bullnose block 160
- bullnose corner bead 190
- bull's nose 185
- bullstretcher 19
- bumper 114
- bundled tubes 245
- bungalow 138
- bungalow court 138
- burden 221
- ~~bus 115, 218~~
- bus bar 76
- bus duct 78
- bushhammered finish 47
- bushing 78
- busway 78
- butsu 255
- buttsuden 255
- ~~butt 115, 218~~
- butterfly 140
- butterfly roof 208
- butterfly wedge 140
- butt hinge 115
- butt joint 140
- butt-joint glazing 113
- buttonhead 83
- butt plate 174
- butress 262
- butress pier 262
- butts and bounds 246
- butt splice 203
- butt weld 86
- Butyl 193
- butyl rubber 193
- BX cable 78
- Byzantine architecture 130
- Cc**
- cabinet drawing 71
- cable 28, 78
- cable loop 168
- cable molding 185
- cable-restrained pneumatic structure 168
- cable-stayed structure 29
- cable structure 28
- cable support 242
- cable tray 78
- CA bulb 144
- cadastral survey 246
- cadmium 175
- cairn 248
- calisson 30, 103
- calcine 42
- calcined gypsum 188
- calcium hydroxide 157
- calcium oxide 157
- calendering 192
- calfs tongue 184
- call button 81
- calorie 117
- cab 157
- cam 116
- camber 15
- camber bar 87
- camber piece 12
- camber slip 12
- camblum 276
- camelback truss 261
- cam handle 273
- camouflage 265
- campanile 36
- camp ceiling 30
- cancelli 35
- candela 142
- candle 142
- candlepower 142
- candlepower distribution curve 146
- canephora 250
- cant 109
- cant bay window 274
- cantharus 35
- cantilever 17
- cantilever beam 17
- cantilevered step 235
- cantilever footing 101
- cantilever method 105
- cantilever wall 270
- canton 266
- cant strip 177
- cap 199
- cap bead 113
- cap block 160
- cap flashing 177
- Cape Cod 138
- capillarity 177
- capillary action 177
- capillary attraction 177
- capillary break 177
- capital 179
- cap nut 84
- cap plate 174
- cap receiver 177
- capscrew 83
- cap sealant 113
- cap sheet 215
- capstone 159
- caravansary 252
- carbide 175
- carbon 170
- carbon steel 170
- car frame 81
- carri 248
- Carolingian architecture 131
- Carpenter Gothic 134
- carpet 95
- carpet cushion 95
- carpet pad 95
- carpet tile 95
- carriage 235
- carriage bolt 84
- carriage porch 25
- Cartesian coordinate 108
- Cartesian space 217
- cartoon 67
- cartouché 183
- cartridge fuse 76
- carved work 237
- caryatid 250
- cased opening 63
- cased pile 103
- case-harden 169
- casemate 98
- casement 273
- casement door 64
- casement stay 273
- casement window 273
- casing 63, 103
- casing bead 190
- casing nail 82
- castellated beam 173
- castellated nut 84
- casting 169, 192
- casting bed 206
- cast-in-place concrete 46
- cast-in-place concrete pile 103
- cast-in-situ concrete 46
- cast iron 170
- castle 99
- castle nut 84
- cast stone 237
- Catal Hüyük 128

- catalyst 192
- catch basin 223
- catenary 28
- cathedral 37
- Catherine wheel 36
- cathetus 181
- cathode 74
- cathodic protection 171
- cation 161
- caulcote 181
- cauliculus 181
- caulk 178
- causeway 249
- caustic lime 157
- cavalier drawing 71
- cavetto 185, 249
- cavetto cornice 249
- cavity wall 156
- cavo-relievo 182
- C bulb 144
- ceiling 30
- ceiling cavity 149
- ceiling joist 211
- cell 74
- ceila 250
- cellar 23
- cellular decking 93
- cellular mat 101
- cellular wall 270
- cellulose 276
- Celsius scale 117
- Celtic cross 183
- cement 42
- cement content 44
- cement-lime mortar 157
- cement mortar 157
- cement paste 43
- cement temper 188
- cenotaph 251
- center 110, 111, 217
- centering 12
- centering shim 113
- centerline 68, 110
- center of gravity 96
- center of mass 96
- center of resistance 244
- center of rigidity 244
- center of vision 72
- center-to-center 267
- Centigrade scale 117
- centimeter 166
- central air conditioning 125
- central axis of vision 72
- central heating 121
- centralized organization 218
- centrifugal fan 127
- centroid 96
- ceramic 32
- ceramic bond 32
- ceramic mosaic tile 33
- ~~ceramic tile~~
- ceramic ware 32
- cercis 256
- certificate of occupancy 49
- cesspool 201
- C-grade 282
- chain 247
- chair 45
- chair rail 186
- chaitya 253
- chamber grave 248
- chamfer 140
- chamfer strip 45
- chancel 37
- chandelier 147
- chantry 37
- chaos 54
- chapel 37, 99
- chapter 37
- chapter house 37
- charrette 58
- chase 122
- chase mortise 141
- chat-sawn 237
- chattri 253
- Chavin 129
- check 278
- checker 184
- checkered plate 172
- check rail 272
- check throat 271
- check valve 199
- cheek 209
- check cut 211
- chemical bond 161
- chemin-de-ronde 99
- chevet 37
- chevron 184
- Chicago School 135
- chigi 255
- chilled water plant 125
- chiller 125
- chimney 87
- chimney arch 87
- chimney bar 87
- chimney breast 87
- chimney cap 87
- chimney cheek 87
- chimney corner 87
- chimney effect 127
- chimney pot 87
- ~~chimney stack~~
- Ch'in 129
- china 32
- china clay 32
- Chinese architecture 128
- Chinese lacquer 187
- chinoiserie 133
- chipboard 284
- Chi-Rho 183
- chisel point 82
- choir 37
- chord 110, 259
- chorten 253
- chorus 256
- Chou 129
- chrismon 183
- Christianity 35
- chroma 38
- chrome 171
- chromeplate 171
- chromium 171
- chudo 255
- chumon 255
- chute 46
- ciborium 35
- CIE 150
- cinder 170
- Cinquecento architecture 133
- cinqfoil 275
- circle 110
- circuit 74
- circuit breaker 76
- circuit vent 200
- circular mill 166
- circular stair 234
- circulation 218
- circumference 110
- circumvallate 98
- cistern 196
- citadel 99
- city planning 10
- civilization 128
- cladding 171
- claim 27
- clapboard 268
- class A 89
- class A fire 90
- class B 89
- class B fire 90
- class C 89
- class C fire 90
- class D 89
- class D fire 90
- class E 89
- Classic 130
- Classical architecture 130
- classicism 133
- Classic Revival 133
- clay 224
- clay loam 224
- cleanout 157, 200
- clear sky 150
- clear span 15
- clearstory 274
- cleat 214
- cleavage plane 237
- clerestory 274
- clevis 84
- climbing form 45
- clinch 82
- clinker 18, 42
- clip joint 155
- clithral 251
- cloister 37
- cloister garth 37
- cloister vault 263
- close 37
- closed cornice 213
- closed plan 216
- closed string 235
- closed valley 212
- close grain 278
- closer 20, 155
- closet bend 199

- closure 20, 265
- cloudy sky 150
- clustered organization 218
- cluster housing 139
- coach screw 83
- coal tar 215
- coarse aggregate 43
- coarse grain 278
- coarse texture 278
- coaxial cable 78
- cobble 224
- cobblestone 224
- cock bead 268
- cocking piece 213
- Code of Hammurabi 129
- coefficient of elasticity 164
- coefficient of expansion 165
- coefficient of heat transfer 118
- coefficient of utilization 149
- coffer 30
- cofferdam 221
- coherent 54
- cohesionless soil 225
- cohesive soil 225
- coil 75, 126
- coincident 109
- coke 170
- cold-air return 122
- cold-cathode lamp 145
- cold-draw 169
- cold-process roofing 215
- cold-roll 169
- cold-working 169
- collage 54
- collapse mechanism 243
- collar 177
- collar beam 211
- collar joint 155
- collar tie 211
- collector 226
- collegiate Gothic 134
- collimate 146
- collinear forces 96
- Colonial architecture 133
- colonial siding 268
- colonnade 25
- color 38
- color circle 39
- colorfast 187
- coloring agent 43
- color rendering Index 145
- color scheme 39
- color temperature 145
- color triangle 39
- color wheel 39
- column 40, 179
- column base 85
- column cap 85
- column capital 205
- column-cover-and-spandrel system 269
- columniation 179
- column strip 204
- colymbethra 28
- combed finish 189
- combination door 64
- combination window 274
- combined footing 101
- combined sewer 223
- combined stresses 41, 163
- combplate 81
- combustible 88
- combustible construction 51
- combustion air 121
- comfort envelope 120
- comfort zone 120
- commercial bronze 175
- commodity 10
- common alloy 175
- common bond 20
- common brass 175
- common brick 18
- common dovetail 141
- common lap 212
- common logarithm 229
- common nail 82
- common rafter 210
- commons 139
- common vent 200
- communicate 58
- communion table 35
- compact fluorescent lamp 145
- compaction 225
- complementary color 39
- complexity 54
- compluvium 137
- components of a force 96
- composite column 203
- composite decking 93
- Composite order 181
- composite panel 284
- composite pile 102
- composite truss 261
- composite wall 156
- composition 53
- compound column 203
- compressibility 162
- compression 162
- compression gasket 113
- compression member 238
- compression molding 192
- compression reinforcement 202
- compression splice 203
- compression test 44, 162
- compressive force 162
- compressive refrigeration 124
- compressive strain 162
- compressive stress 162
- compressor 124
- concatenation 55
- concave 110
- concave joint 155
- concealed grid 31
- concealed hinge 115
- conceive 58
- concentrated load 151
- concentric 110
- concentric tendon 207
- concept 59
- conception 67
- concrete 42
- concrete block 160
- concrete brick 160
- concrete masonry unit 160
- concrete mixer 46
- concrete nail 82
- concurrent forces 96
- condensate 176
- condensation 176
- condense 161
- condenser 124
- condominium 139
- conduction 118
- conductivity 74
- conductor 78
- conduit 78
- cone 45
- cone bolt 45
- cone of vision 72
- configurationism 265
- Confucianism 129
- conge 185
- congruent 109
- conical vault 263
- conic section 111
- conifer 276
- connected load 77
- connection 59
- connector 79
- conoid 220
- consistency 44
- console 186
- consolidation 46, 100
- constancy 265
- constant-air-volume system 126
- construction 48, 49, 50
- construction class 51
- construction documents 50
- construction drawings 68
- construction joint 178
- construction load 151
- construction manager 48
- construction type 51
- Constructivism 135
- consultant 48
- contact pressure 100
- content 53
- continental seating 257
- continuity 54, 265
- continuity of outline 72
- continuous beam 17
- continuous footing 101
- continuous hinge 115
- continuous plate 194
- continuous slab 204
- continuous vent 200
- contour 66
- contour drawing 66
- contour interval 69
- contour line 69
- contract 49
- contract documents 50
- contract drawings 68
- contraction joint 178
- contract limit 221
- contractor 48

- ul style="list-style-type: none; padding-left: 0;">
- contradiction 54
- contrast 54
- contrast ratio 148
- contributory area 241
- concrete 58
- control joint 178, 190
- control-joint block 160
- controlled fill 222
- control panel 80
- convection 118
- convector 123
- convenience outlet 79
- convergence 73, 264
- conversion burner 121
- conversion table 166
- convex 110
- cool 39
- coolant 124
- cooling degree-day 124
- cooling load 124
- cooling medium 124
- cooling tower 125
- co-op 139
- cooperative 139
- cooperative apartment 139
- coordinate 108
- coordinator 116
- copal 187
- coped joint 140
- copestone 159
- coping 266
- coping block 160
- coplanar forces 96
- copolymer 192
- copper 175
- copper roofing 214
- corbel 155
- corbel arch 14
- corbeling 155
- corbel vault 262
- corbie gable 159
- corblestep 159
- cord 79
- cordon 98, 159
- cone 65, 75, 160, 225, 283
- coreboard 191
- core test 44
- Corinthian order 181
- cork tile 95
- corner bead 190
- corner block 160
- corner board 268
- corner brace 267
- corner lath 190
- corner post 267
- corner reinforcement 190
- cornice 179, 186
- cornice lighting 147
- cornice return 213
- corona 179
- coronet 186
- corporation cock 196
- corporation stop 196
- correction line 246
- corridor 216
- corrosion 171
- corrugated fastener 82
- corrugated metal 172
- corrugated roofing 214
- cortile 26
- coscant 109
- cosine 109
- cosine law 142
- cotangent 109
- coulomb 28
- counterbore 84
- counterbrace 259
- counterflashing 177
- counterfort 270
- counterlight 150
- counterpoint 54
- counterpoise 55
- counterscarp 98
- countersink 83
- counterweight 80
- couple 96, 211
- couple-close 211
- coupling 199
- course 155, 246
- coursed ashlar 158
- coursed rubble 158
- court 26
- courtyard 26
- covalent bond 161
- cove 30, 185
- cove ceiling 30
- cove lighting 147
- cover 202
- coverage 187, 212
- covering power 187
- cover plate 173
- cowl 87
- C-plugged grade 282
- CPM 49
- cracked section 202
- cracking load 202
- cradle vault 263
- cramp iron 158
- crawlspace 23
- crazing 47
- creative imagination 59
- creativity 59
- creep 165
- cremona bolt 273
- crenel 99
- crenelated 99
- crenelle 99
- creosote 280
- crepidoma 250
- crescent 139
- crescent truss 261
- crib 270
- cribbing 270
- cribwork 270
- cricket 209
- cripple 267
- cripple jack 211
- criterion 58
- critical angle 233
- critical buckling load 40
- critical buckling stress 40
- critical density 225
- critical height 270
- critical section 202
- critical void ratio 225
- crocket 37
- cromlech 248
- crook 278
- cross 183, 199
- crossband 65, 283
- cross bracing 243
- crossbridging 92
- cross-contour drawing 66
- crosscut 278
- cross formée 183
- cross-garnet 115
- cross grain 278
- crosshatching 66
- crossing 36
- cross-lap joint 141
- crosslight 150
- crossover 199
- cross section 70
- cross tee 31
- cross vault 263
- cross ventilation 127
- crowfoot 68
- crown 12, 276
- crown glass 112
- crown molding 186
- crown post 261
- crown tile 214
- crowstep 159
- cruck 210
- crushed gravel 224
- crushed rock 224
- crushed stone 224
- crypt 37
- crystal 161
- cube 111
- cubic measure 166
- cubism 135
- cul-de-four 61
- cull 18
- cult temple 249
- culture 128
- culvert 223
- cup 278
- cupola 61
- curb 208
- curb box 196
- curb cock 196
- curb cut 221
- curb roof 208
- curb stop 196
- cure 47
- current 74
- curtail 235
- curtail step 235
- curtain 98
- curtain wall 269
- curve 110
- Curvilinear style 132
- curvilinear tracery 275
- cushion 102

- cushion block 102
- cushion head 102
- cushion rafter 210
- cusp 110, 275
- cusplation 275
- cut and fill 222
- cut-and-mitered string 235
- cutaway 71
- cut nail 82
- cutoff 223
- cutoff stop 65
- cut pile 95
- cut stone 237
- cut string 235
- cycloid 110
- cyclone cellar 23
- cyclopean 158
- cyclostyle 251
- cylinder 111, 116
- cylinder glass 112
- cylindrical surface 219
- cyma 185
- cyma recta 185
- cyma reversa 185
- cymatium 179, 181
- cyrtostyle 251
  
- Dd**
- Dacron 193
- dado 140, 179, 268
- dado joint 140
- dagoba 253
- daibutsu 255
- damp 245
- damp check 177
- damp course 177
- dampier 87, 125
- damping 152
- damping mechanism 245
- dampproofing 176
- dancette 184
- dancing step 234
- dancing winder 234
- dap 140
- darby 47
- dark 38
- Dark Ages 130
- dash-bond coat 28
- dashed line 68
- dash-tracweled finish 189
- datum 58, 247
- daubing 189
- day 271
- daylight 150
- daylight factor 150
- daylighting 150
- dead 76, 230
- dead-air space 119
- deadbolt 116
- dead knot 278
- dead load 151
- deadlock 116
- deadman 270
- dead shore 222
- deambulatory 37
- decastyle 179
- decay 278
- decay rate 230
- decibel 229
- deciduous 276
- deck 25, 93
- decking 93, 279
- deconstruction 135
- decorated shed 135
- Decorated style 132
- decorative plywood 283
- deep 38
- deep beam 203
- deep foundation 102
- defector sheave 80
- deflection 15
- deformation 164
- deformed bar 202
- degree 108
- degree-day 121
- degree of freedom 105
- degree of indeterminacy 105
- degree of redundancy 105
- delight 10
- deluge system 90
- demand factor 77
- demirelief 182
- demountable partition 266
- density 167
- dentil 181
- dentil band 184
- depressed tendon 207
- descriptive geometry 69
- descriptive specification 50
- design 52, 58
- design-build 48
- design concept 59
- design drawing 67
- design load 240
- design principle 54
- design process 58
- design value 280
- design wind pressure 154
- design wind velocity 154
- de Stijl 135
- detached dwelling 138
- determinate 105
- develop 58
- developed length 199
- developer 48
- devise 58
- dewater 221
- dew point 120
- dew-point temperature 120
- D-grade 282
- diaconicon 35
- diagonal 73, 109, 261
- diagonal bracing 243
- diagonal grain 278
- diagonal point 73
- diagonal rib 263
- diagonal sheathing 268
- diagonal slating 213
- diagonal tension 203
- diagonal vanishing point 73
- diagram 53
- diameter 110
- diamond matching 283
- diamond point 82
- diaper 184
- diaphragm 243
- diastyle 179
- diazoma 256
- dicalcium silicate 42
- die 169, 179
- die casting 169
- dielectric 78
- dielectric strength 78
- differential leveling 247
- differential settlement 100
- diffracted sound 230
- diffraction 143
- diffuse 143
- diffuser 122, 146
- diffusion 143
- dimension line 68
- dimension lumber 279
- dimension shingles 213
- dimension stone 237
- dimensional stability 165
- dimetric projection 71
- diminishing course 213
- dimmer 79
- dimmer switch 79
- dipteral 251
- direct current 75
- direct glare 148
- direct-indirect lighting 148
- direction 55
- direct lighting 148
- Directoire style 133
- direct placement 46
- direct return 123
- directrix 111
- direct sound 230
- direct stress 162, 259
- disability glare 148
- discharge lamp 145
- discharging arch 266
- discomfort glare 148
- discontinuous construction 232
- discontinuous diaphragm 244
- discontinuous shear wall 244
- discrimination 264
- displuviate 137
- disposal 198
- disposal field 201
- disposer 198
- distance point 73
- distance separation 89
- distributed load 151
- distribution box 201
- distribution cap 168
- distribution line 201
- distribution of base shear 153
- distribution panel 77
- distribution pipe 201
- distribution rib 204
- distyle 179
- distyle in antis 251

- diversion box 201
- diversity factor 77
- dodecahedron 111
- dodecastyle 179
- dog-leg stair 234
- dogtooth 184
- dogtrot 138
- dolly 86
- Dolly Varden siding 268
- dolmen 248
- dolomite 236
- dome 60, 205
- doujon 99
- door 62
- door bevel 63
- door buck 63
- door chain 114
- door check 114
- door clearance 63
- door contact 81
- doorframe 63
- door interlock 81
- doorjamb 63
- doorknob 116
- door opener 62
- doorplate 114
- door pull 114
- doorskin 28
- doorstop 63, 114
- Doppler effect 228
- Doric cyma 185
- Doric order 180
- dormer 209
- dormer window 274
- dosing chamber 201
- dosseret 36
- dotted line 68
- dou 254
- double-acting door 62
- double-acting hinge 115
- double angle 172
- double-bevel weld 86
- double-cable structure 29
- double complementary 39
- double-corner block 160
- double-curvature structure 29
- double doors 62
- double-egress frame 65
- double-extra-strong pipe 172
- double-framed roof 210
- double glazing 113
- double grid 239
- double-hung window 272
- double jack rafter 211
- double-L stair 234
- double overhanging beam 17
- double-return stair 234
- double roof 210
- double-strength glass 112
- double tee 206
- double-vee weld 86
- doubling course 212
- dougong 254
- dovetail 141
- dovetail halving 141
- dovetail hinge 115
- dovetail joint 141
- dowel 85, 178
- dowel pin 85
- downdraft 87
- downfeed distribution system 197
- downlight 147
- downspout 209
- draft 58, 67, 87, 237
- drafted margin 237
- drafting 68
- draft stop 89
- dragged finish 189
- dragon beam 211
- dragon piece 211
- dragon tile 211
- drain 200
- drainage mat 176
- drainage system 200
- drainage tile 201
- drainfield 201
- drainspout 209
- drain tile 201
- draped tendon 207
- Dravidian 130
- drawbore 141
- drawbore pin 141
- drawbridge 99
- drawdown 196
- drawing 66
- drawn finish 169
- drawn glass 112
- dress circle 258
- dressed dimension 277
- dressed lumber 277
- dressed size 277
- dressed stone 237
- dressling 271
- dressling room 258
- drift 13, 86, 152
- driftbolt 82
- drift index 153
- drift limitation 153
- driftpin 82, 86
- drip 271
- drip cap 271
- drip edge 212
- drip molding 271
- dripstone 159
- drive band 102
- drivescrew 82
- drive shoe 102
- driving sheave 80
- dromos 248
- drop 122, 180, 263
- drop arch 14
- drop ceiling 31
- drop chute 46
- droplight 147
- drop panel 205
- dropped ceiling 31
- dropped girt 107
- drop-point slating 213
- drop siding 268
- drop stage 257
- drop tee 199
- drop window 272
- drum 61, 180
- drum trap 198
- drum wall 227
- dry-bulb temperature 120
- dry glazing 113
- drying oil 187
- drying shrinkage 47
- dry mix 44
- dry-pack 174
- dry-pipe system 90
- dry-press process 18
- dry return 123
- dry rot 278
- dry-shake finish 47
- dry standpipe 90
- drywall 191
- drywall frame 65
- dry well 223
- dual-duct system 126
- dual system 244
- dual vent 200
- duct 78, 122
- ductility 164
- ducting 122
- duct liner 122
- ductwork 122
- dumbwaiter 80
- dungeon 99
- duodecastyle 179
- duomo 132
- duplex 138, 139
- duplex apartment 139
- duplex house 138
- duralumin 175
- duramen 276
- duration of load factor 280
- Dutch bond 20
- Dutch Colonial 138
- Dutch door 64
- Dutch lap 212
- dwarf wall 267
- dye 187
- dynamic fit 57
- dynamic load 151
- dynamic pile formula 102
- dynamics 58, 97
- dynamic wind pressure 154

## Ee

- Early Christian Architecture 130
- Early English style 132
- Early French style 132
- Early Renaissance 132
- early wood 276
- earthenware 32
- earth pressure 151
- earthquake 152
- earthquake load 152
- earth tieback wall 270
- earthwork 221
- eased edge 140
- easement 140, 221
- eaves 209



- eaves course 214
- eaves flashing 212
- eaves trough 209
- E bulb 145
- eccentric 110
- eccentric bracing 244
- eccentric force 162
- eccentricity 41
- eccentric load 162
- eccentric tendon 207
- echinus 180, 181
- echo 230
- eclectic 134
- eclecticism 134
- economy 58
- economy brick 19
- economy wall 156
- ectype 59
- edge 111, 218
- edge block 113
- edge clearance 113
- edge distance 84
- edge grain 278
- edge joint 140
- edger 47
- edifice 22
- effective area of concrete 202
- effective area of reinforcement 202
- effective depth 202
- effective length 17, 41
- effective length factor 41
- effective prestress 206
- effective span 15
- effective temperature 120
- efficacy 144
- efficiency apartment 139
- efflorescence 18
- effluent 201
- egg and dart 181
- egg and tongue 181
- eggcrate 146
- eggshell 187
- egg stone 236
- Egyptian architecture 128
- Egyptian Gorge 249
- eightpenny nail 82
- el 26, 199
- elastic deformation 164
- elastic design 240
- elasticity 164
- elastic limit 164
- elastic modulus 164
- elastic range 164
- elastomer 193
- elastomeric 215
- elastomeric roofing 215
- elbow 199
- electrical metallic tubing 78
- electric arc 86
- electric cell 74
- electric charge 74
- electric elevator 80
- electric furnace 121
- electric heat 123
- electricity 74
- electric motor 75
- electrode 74
- electrolysis 171
- electrolyte 74
- electrolytic protection 171
- electromotive force 74
- electron 161
- electroplate 171
- electrovalent bond 161
- element 161
- elevation 70, 247
- elevator 80
- elevator car 81
- elevator car safety 80
- elevator pit 80
- elevator shaft 80
- ell 26, 199
- ellipse 110, 111
- ellipsoid 111
- elliptical stair 234
- elliptical surface 220
- elliptic paraboloid 219
- elongation 162
- embattlement 99
- embedded space 218
- embedment length 202
- emboss 182
- embrasure 99, 159
- emergency generator 75
- emergency lighting 91
- emissivity 112, 119
- emphasis 54
- Empire style 133
- empty-cell process 280
- enamel 32, 187
- encased knot 278
- encelnte 99
- encroachment 221
- end-bearing pile 102
- end distance 84
- end grain 278
- end joint 140
- endlap 212
- end-lap joint 141
- end-nail 82
- endurance ratio 165
- endwall 223
- energy 167
- energy code 51
- energy efficiency rating 124
- enfilade 216
- engage 59
- engaged column 266
- engawa 137
- engineer 48
- engineered brick 19
- engineered grade 282
- engineering 11
- engineer's chain 247
- English bond 20
- English cross bond 20
- engrave 182
- enneastyle 179
- entablature 179
- entasis 180
- enthalpy 120
- entrained air 42
- environmental design 10
- envision 59
- EPDM 215
- epicenter 152
- epinaos 250
- epoxy mortar 157
- epoxy resin 193
- épure 67
- equal leg angle 172
- equal loudness contour 229
- equiangular 109
- equilateral 109
- equilateral arch 14
- equilibrant 97
- equilibrium 55, 97
- equilibrium diagram 97
- equilibrium moisture content 277
- equinox 226
- equipole 55
- equivalent load 151
- equivalent round 172
- equivalent thickness 160
- ER bulb 144
- erect 49
- erection bracing 151
- erection stress 151
- ergonomics 57
- escalator 81
- escarp 98
- esconson 63
- escutcheon 116
- esonarthex 35
- esquisse 67
- esthetics 10
- Etruscan architecture 129
- Euclidean geometry 108
- Euclidean space 217
- Euler buckling load 40
- eurythmy 56
- eustyle 179
- evaluate 58
- evaluation 58
- evaporate 161
- evaporative cooling 120
- evaporator 124
- evergreen 276
- evolute 110
- excavation 221
- excelsior 119
- exedra 35
- exfoliation 43
- exhaust air 125
- exhaust fan 127
- exhedra 35
- existing grade 222
- exit 91
- exit access 91
- exit corridor 91
- exit court 91
- exit discharge 91
- exit door 91
- exit light 91
- exit passageway 91

- exit stairway 91  
exonarthex 35  
expanded clay 43  
expanded metal 172  
expanded-metal lath 190  
expanded plastic 119  
expanded shale 43  
expanded slate 43  
expanded view 71  
expansion bend 197  
expansion bolt 84  
expansion joint 178  
expansion joint cover 178  
expansion loop 197  
expansion screed 190  
expansion shield 84  
expansion sleeve 84, 178  
expansion valve 124  
expansivity 165  
exploded view 71  
explosive rivet 86  
exposed aggregate finish 47  
exposed grid 31  
exposure 212  
exposure 1 282  
exposure 2 282  
exposure condition 154  
exposure durability 282  
expression 128  
extended plenum system 122  
extended-service lamp 144  
extensibility 178  
extension bolt 116  
extension casement hinge 273  
extensometer 162  
exterior 282  
exterior angle 109  
exterior exit 91  
exterior exit balcony 91  
exterior panel 205  
exterior plywood 282  
exterior wall 266  
external reflected component 150  
external wall 266  
extra-strong pipe 172  
extrados 12  
extruded polystyrene 119  
extrusion 169  
eye 264  
eyebolt 84  
eyebrow 209  
eyelid 99
- Ff**  
fabric 53  
fabricate 50  
facade 24  
face 98  
face brick 18  
face clearance 113  
faced block 160  
faced wall 156  
face glazing 113  
face-nail 82  
faceplate 79, 116  
face putty 113  
face shell 160  
face string 235  
face width 279  
facing 156  
facing brick 18  
factored load 240  
factored load design 240  
factor of safety 240  
factory lumber 279  
Fahrenheit scale 117  
fall 200  
false front 24  
falsework 49  
fan 127  
fan-coil unit 126  
fancy 59  
fanlight 63  
fan truss 261  
fan vault 263  
fascia 181, 213  
fascia board 213  
fastening 82  
fastest-mile wind speed 154  
fast-pin hinge 115  
fast-track 49  
fatigue 165  
fatigue limit 165  
fatigue ratio 165  
fat mix 157  
faucet 197  
fault 76, 152  
feasibility study 49  
feather 140  
Federal style 133  
feedback 58  
feeder 75  
feint 177  
female 199  
fenestration 24  
ferrocement 202  
ferroconcrete 202  
ferrous metal 170  
ferrule 281  
Fertile Crescent 128  
festoon 184  
fiber 276  
fiberboard 119, 284  
fiberboard sheathing 119  
Fiberglas 119  
fiberglass 119  
fiberglass-reinforced concrete 202  
fiberglass-reinforced plastic 193  
fiberglass shingle 212  
fiber-saturation point 277  
Fibonacci series 56  
field 155  
fielded panel 268  
field of vision 264  
fieldstone 237  
field tile 214  
figure 109, 265, 283  
figured glass 112  
figure-ground 265  
filament 144  
fillgree 182  
fill 222  
filler 192  
filler metal 86  
filler plate 174  
fillet 181, 185  
filleting 177  
fillet weld 86  
fillister head 83  
film 192  
filter 125  
filter fabric 176  
final prestress 206  
fine aggregate 43  
fine grading 222  
fine texture 278  
finger joint 140  
finial 37  
finish coat 187, 188  
finish floor 92  
finish flooring 94  
finish grade 222  
finish hardware 114  
finishing 47  
finishing nail 82  
finish string 235  
Fink truss 261  
fin tube 123  
fire-alarm system 90  
fire area 89  
fire assembly 89  
firebox 87  
firebreak 89  
firebrick 18  
fire clay 18  
fire curtain 257  
firecut 93  
fire damper 89  
fire-detection system 90  
fire door 89  
fire escape 91  
fire hazard 88  
fire hose 90  
fire hydrant 90  
fire load 88  
fireplace 87  
fireplug 90  
fireproofing 88  
fire pump 90  
fire-rated 88  
fire-resistance rating 88  
fire-resistive 88  
fire-retardant paint 187  
fire-retardant wood 280  
fire safety 88  
fire screen 87  
fire separation 89  
firestop 267  
fire wall 89  
fire window 89  
fire zone 89  
firing 32  
firmness 11  
first floor 23  
fish joint 140

- fishplate 140  
 fixed arch 13  
 fixed connection 242  
 fixed-end beam 17  
 fixed-end connection 242  
 fixed frame 104  
 fixed joint 242  
 fixed light 273  
 fixed sash 273  
 fixture drain 200  
 fixture unit 197  
 Flamboyant style 132  
 flame finish 237  
 flame retardant 88  
 flame-spread rating 88  
 flange 173  
 flange angle 173  
 flank 98  
 flanking path 232  
 flap hinge 115  
 flare header 20  
 flashing 18, 177  
 flash point 88  
 flat 139, 187, 257  
 flat arch 14  
 flat grain 278  
 flat head 83  
 flat-joint pointing 155  
 flat plate 205  
 flat roof 208  
 flat slab 205  
 flat slicing 283  
 flat truss 261  
 flat use factor 280  
 flèche 37  
 Flemish bond 20  
 Flemish cross bond 20  
 Flemish diagonal bond 20  
 fleur-de-lis 184  
 flexible 238  
 flexible duct 122  
 flexible metal conduit 78  
 flexure formula 16  
 flier 234  
 flies 257  
 flight 233  
 flitch 283  
 flitch beam 281  
 flitch girder 281  
 flitch plate 281  
 float 47  
 float finish 47, 189  
 float glass 112  
 floating coat 188  
 floating foundation 101  
 float switch 79  
 float valve 198  
 flocked carpet 95  
 flood lamp 147  
 flood level 198  
 floodlight 147  
 floor 23, 92  
 floor anchor 85  
 floor cavity 149  
 floor closer 114  
 floor covering 95  
 floor framing 92  
 flooring nail 82  
 floor plan 69  
 Florentine mosaic 182  
 flowing tracery 275  
 flow pressure 197  
 flow rate 198  
 flue 87  
 flue lining 87  
 fluid 161  
 fluid-applied roofing 215  
 fluid ounce 166  
 fluorescence 145  
 fluorescent lamp 145  
 flush bead 268  
 flush bolt 116  
 flush door 65  
 flush frame 65  
 flush girt 107  
 flush glazing 113  
 flush joint 140, 155  
 flushometer valve 198  
 flush panel 268  
 flute 180  
 fluting 180  
 flutter 154, 230  
 flux 86  
 flux-cored arc welding 86  
 fly ash 42  
 flying buttress 262  
 flying form 45  
 flying shore 221  
 fly loft 257  
 fly rafter 211  
 foamed plastic 119  
 foamed-in-place insulation 119  
 foam glass 119  
 foam rubber 193  
 focus 217  
 focusing 230  
 foil 275  
 foil-backed gypsum board 191  
 folded plate 194  
 folding casement 273  
 folding door 62  
 foliated 184  
 foliation 275  
 folly 27  
 font 35  
 foot 166  
 foot-candle 142  
 foot cut 211  
 footing 100  
 foot-lambert 142  
 footlights 257  
 footpace 234  
 foot-pound 167  
 force 96  
 force arm 96  
 forced warm-air heating 122  
 forecourt 25  
 foreground 265  
 foreshortening 73  
 forge 169  
 form 45, 52, 53  
 form-active structure 238  
 form decking 93  
 formeret 263  
 Formica 193  
 form liner 45  
 form nail 82  
 form tie 45  
 formula weight 161  
 formwork 45  
 fortification 98  
 forum 251  
 foundation 100  
 foundation drain 176  
 foundation investigation 225  
 foundation wall 101  
 Four Noble Truths 253  
 four-pipe system 126  
 four-way switch 79  
 fox bolt 84  
 foxtail wedge 141  
 fox wedge 141  
 foyer 258  
 fractable 159  
 fracture 164  
 frame 104  
 framed connection 174  
 framed tube 245  
 frame house 267  
 frame system 244  
 framework 106  
 framing 106  
 framing anchor 85  
 framing plan 69  
 Franklin stove 121  
 free-body diagram 97  
 free fall 46  
 freehand drawing 66  
 freestone 237  
 freight elevator 80  
 French arch 14  
 French door 64  
 French drain 223  
 French window 273  
 frequency 228  
 fresco 182  
 fresh air 125  
 fresh-air inlet 200  
 Fresnellens 146  
 fret 184  
 frictional damping 245  
 friction pile 102  
 frieze 179, 186  
 frit 32  
 front 27  
 front hearth 87  
 frontispiece 24  
 front of the house 258  
 frost boil 100  
 frost heave 100  
 frostline 100  
 frustum 111  
 fuel-contribution rating 88  
 fulcrum 97  
 full-cell process 280

- full frame 107
- full-penetration weld 86
- full-surface hinge 115
- function 58
- functional dimension 57
- functional grouping 216
- Functionalism 135
- fundamental 228
- fundamental frequency 228
- fundamental period of vibration 152
- funicular arch 13
- funicular curve 28
- funicular polygon 28
- funicular shape 28
- funicular structure 28
- funicular truss 259
- furnace 121
- furring 190
- fuse 76
- fusible alloy 76
- fusible link 89
- fusible metal 76
- fusion-bonded carpet 95
- Gg**
- gabion 270
- gable 208
- gable dormer 209
- gable roof 208
- gable wall 266
- gable window 274
- gadroom 185
- gage 172
- gain 115, 141
- galilee 37
- galleria 27
- gallery 36, 216, 258
- gallet 158
- gallon 166
- galvanic cell 74
- galvanic corrosion 171
- galvanic series 171
- galvanize 171
- galvanized iron 171
- gambrel roof 208
- garden apartment 139
- garden-wall bond 20
- garderobe 99
- gargoyle 37
- garret 158
- garth 37
- gas 161
- gas furnace 121
- gasket 199
- gas welding 86
- gate contact 81
- gate valve 199
- gathering 122
- auge 19, 95, 172, 212
- auged plaster 188
- auging plaster 188
- autama Buddha 253
- azebo 27
- bulb 144
- general contractor 48
- general diffuse lighting 148
- general lighting 148
- general purpose circuit 77
- generator 75, 111, 124
- generatrix 111
- geodesic dome 60
- geometric 52
- geometrical stair 234
- Geometric style 132
- geometric tracery 275
- geometry 108
- Georgian architecture 133
- geotechnical 225
- geotextile 176
- gestalt 265
- Gestalt psychology 265
- gesture 66
- gesture drawing 66
- gfrc 202
- gib door 64
- gingerbread 134
- girder 106
- girt 107, 269
- glacis 98
- glare 148
- glass 112
- glass block 112
- glass brick 112
- glass door 64
- glassed surface 237
- glass mullion system 113
- glass size 113
- glass wool 119
- glaze 32
- glaze coat 187
- glazed wall tile 33
- glaze-fired 32
- glazier's point 113
- glazing 113
- glazing bar 271
- glazing bead 113
- glazing brad 113
- glazing compound 113
- glazing size 113
- glazing stop 113
- glazing tape 113
- globe valve 199
- gloss 187
- glory 183
- glued-laminated timber 281
- glulam 281
- gneiss 236
- godroom 185
- gold bronze 175
- golden mean 56
- golden section 56
- gong 254
- good grade 283
- gooseneck lamp 147
- gopuram 253
- gorge 98
- Gothic arch 14
- Gothic architecture 132
- Gothic Revival 134
- government system 246
- grab bar 198
- gradation 55
- grade 222
- grade beam 101
- graded aggregate 43
- grade line 222
- grademark 280
- Grade N 160
- grade stake 222
- gradestamp 282
- grade strip 45
- Grade S 160
- gradin 256
- gradine 256
- grading plan 69
- graffiti 182
- graffito 182
- grain 237, 278
- gram 167
- gram calorie 117
- grand tier 258
- granite 236
- granular material 225
- graphic 73
- graphic scale 69
- gravel 224
- gravel drain 176
- gravel stop 215
- gravity 167
- gravity hinge 115
- gravity wall 270
- gravity water system 197
- gray 39
- gray scale 38
- grease interceptor 201
- grease trap 201
- great circle 60
- great hall 99
- Great Wall of China 129
- Greek architecture 129
- Greek cross 183
- Greek temple 250
- Greek theater 256
- green 157
- Greenfield conduit 78
- green room 258
- grid 68, 101, 257
- gridiron 257
- grid organization 218
- grid structure 195
- griffe 183
- griffin 183
- grillage 101
- grille 122
- grisaille 66
- groin 263
- groin rib 263
- groin vault 263
- grommet 78
- groove weld 86
- gross cross-sectional area 160
- grotesque 183
- ground 76, 190, 265
- ground acceleration 152
- ground beam 101

- groundbreaking 221
- ground coat 187
- ground color 187
- grounded conductor 76
- ground fault 76
- ground-fault interrupter 76
- ground floor 23
- grounding electrode 76
- grounding outlet 79
- grounding plug 79
- ground light 150
- ground line 72
- ground plane 72
- ground slab 101
- groundwater 223
- ground wire 76
- group number 282
- grout 157
- grouted frame 65
- grouted masonry 157
- grout lift 157
- grout pour 157
- growth ring 276
- gryphon 183
- gudgeon 115
- gulde meridian 246
- gulde rail 80
- gullloche 184
- gula 185
- gulou 254
- Gunitite 46
- Gunter's chain 247
- Gupta 130
- gusset 261
- gust factor 154
- gutta 180
- guttae band 180
- gutter 209
- gutter hanger 209
- guy cable 29
- gypsum 188
- gypsum board 191
- gypsum lath 190
- gypsum-perlite plaster 188
- gypsum plaster 188
- gypsum sheathing 191
- gypsum-vermiculite plaster 188
  
- Hh**
- halden 255
- half-blind dovetail 141
- half-lap joint 141
- half-mortise hinge 115
- halfpace landing 234
- half relief 182
- half round 185
- half-round slicing 283
- halfspace landing 234
- half-surface hinge 115
- half-timber 107
- half-turn stair 234
- hall 216
- hallway 216
- halo 183
- halogen lamp 144
- halved joint 141
- hammer beam 210
- hammer-beam roof 210
- hammer brace 210
- hammer post 210
- hand 114
- handrail 233
- handsplit-and-resawn shake 213
- hanger 85
- Hanging Gardens of Babylon 129
- hanging gutter 209
- hanging step 235
- hanging stile 64, 272, 273
- haptic 57
- Harappa 128
- hardboard 284
- hard-burned 32
- hard finish 188
- hard light 148
- hardness 165
- hard steel 170
- hardware 188
- hardware 114
- hardware cloth 172
- hard water 197
- hardwood 276
- harmonic 228
- harmonic motion 152
- harmonic progression 56
- harmonic series 56
- harmony 54
- harped tendon 207
- hashira 255
- hatching 66
- Hather 249
- Hathoric-headed 249
- Hathoric 249
- haunch 12, 17
- haunched tenon 141
- head 63, 197, 213
- header 19, 92
- header block 160
- head flashing 271
- heading course 20
- head joint 155
- headlap 212
- headroom 233
- headwall 223
- head bead 113
- hearing 229
- hearing loss 229
- hearth 87
- heartwood 276
- heat 117
- heat-absorbing glass 112
- heat capacity 117
- heat content 120
- heat exchanger 124
- heating degree-day 121
- heating load 121
- heating medium 121
- heat of condensation 161
- heat of fusion 161
- heat of hydration 47
- heat of solidification 161
- heat of vaporization 161
- heat pump 124
- heat-resistant paint 187
- heat sink 124
- heat-strengthened glass 112
- heat-treatable alloy 175
- heat treatment 169
- heavy-timber construction 51
- hectare 166
- heel 259
- Helan 131
- height 109
- height factor 154
- helicline 233
- hellodon 150
- helix 110, 181
- Hellenic 129
- Hellenistic 129
- heptastyle 179
- hermetic 112
- herringbone 184
- herringbone matching 283
- hertz 228
- hexagon 109
- hexagram 183
- hexahedron 111
- hexastyle 179
- hexhead 84
- hiding power 187
- HID lamp 145
- hierarchy 54
- high altar 37
- high chair 45
- high-density overlay 282
- high gloss 187
- high-intensity discharge lamp 145
- high key 66
- high-lift grouting 157
- highlight 70, 148
- high-output lamp 145
- high polymer 192
- high-pressure laminate 193
- high-pressure sodium lamp 145
- high-range sealant 178
- high relief 182
- High Renaissance 133
- high-rise 22
- high-strength bolt 174
- high-strength low-alloy steel 170
- high-tech 135
- high-tension bolt 174
- high-velocity duct 126
- high-voltage 75
- Hinduism 253
- hinge 115
- hinged frame 104
- hinge joint 242
- hinge stile 64
- hip 209
- hip jack 211
- hipped gable 208
- hipped roof 208
- hip rafter 211
- hip roof 208
- hip tile 214

- history 128
- Hitite architecture 129
- hogan 136
- hoisting cable 80
- hoisting machinery 80
- hoistway 80
- hoistway door 80
- holddown 85
- holddown clip 214
- hollow-backed 94
- hollow-core door 65
- hollow-core slab 206
- hollow masonry unit 160
- hollow-metal door 65
- hollow-metal frame 65
- hollow tile 34
- hollow unit masonry 157
- Holy Ark 250
- holy of holies 250
- homogeneous 54
- honden 255
- hondo 255
- honed finish 237
- honeycomb 47
- honeycomb slating 213
- honeycomb work 252
- honeycomb ornament 184
- hood 87
- hood mold 274
- hook 202
- Hooke's law 164
- hoop force 60
- hoop line 60
- hopper 273
- hopper light 273
- hopper window 273
- horizon 224
- horizontal line 72
- horizontal 108
- horizontal circle 247
- horizontal diaphragm 243
- horizontal exit 91
- horizontal force factor 153
- horizontal furnace 121
- horizontally sliding window 272
- horizontal shearing stress 15
- horizontal torsion 153
- horn 271
- horse 189, 235
- horsed mold 189
- horsepower 167
- horseshoe arch 14
- hose bibb 197
- hosecock 197
- hospital light 273
- hospital stop 65
- hospital window 273
- hot 76
- hot-dip galvanizing 171
- hot-roll 169
- hot-rolled finish 169
- hot-water heating 123
- hot-working 169
- house 136
- house curtain 257
- housed joint 140
- house drain 200
- housed string 235
- houselights 257
- house sewer 200
- house storm drain 223
- house storm sewer 223
- house trap 200
- housing unit 139
- Howe 261
- H-pile 102
- HP-shape 172
- HPS lamp 145
- Hsia 128
- hue 38
- human engineering 57
- human scale 56
- humidifier 125
- humidity ratio 120
- hung sash 272
- hung-span 17
- hurricane anchor 85
- hurricane tie 85
- hut 136
- HVAC 125
- hydrant 90
- hydrated lime 157
- hydration 47
- hydraulic cement 42
- hydraulic elevator 81
- hydrogen bond 161
- hydronic heating 123
- hygrometer 120
- hypaethral 251
- Hypalon 215
- hypar 219
- hyperbola 110, 111
- hyperbolic paraboloid 219
- hyperboloid 220
- hypethral 251
- hypocenter 152
- hypostyle hall 249
- hypotenuse 109
- hypothesis 58
- hypotrachelium 180
- hysteresis damping 245
- li
- I-beam 173, 281
- ice dam 212
- icon 35
- iconostasis 35
- icosahedron 111
- idea 59
- idle sheave 80
- IES 150
- igloo 136
- igneous rock 236
- ignition point 88
- I-joist 281
- illumiance 142
- illumination 142
- image 59, 66
- imagination 59
- Imbrex 214
- Imbrication 184, 212
- Impact factor 151
- Impact insulation class 232
- Impact load 151
- Impact noise 232
- Impervious soil 225
- Implement 58
- Impluvium 137
- Importance factor 154
- Impost 12
- Impost block 36
- Inactive leaf 62
- In-and-out bond 158
- Inca architecture 132
- Incandescence 144
- Incandescent lamp 144
- Inch 166
- Inch-pound 167
- Incidence 143
- Inclined lift 81
- Increaser 199
- Indeterminate 105
- Indian architecture 129
- India rubber 193
- Indirect glare 148
- Indirect lighting 148
- Indirect waste pipe 200
- Individual circuit 77
- Individual vent 200
- Induction unit 126
- Inert gas 161
- Inert gas configuration 161
- Inert-gas shielded arc welding 86
- Inertia 97
- Inertia block 232
- Infiltration 118
- Inflection 58, 110
- Inflection point 17
- Inform 59
- Infrared 142
- Infrared lamp 144
- Ingenhook 87
- Ingot 169
- Initial prestress 206
- Initiation 58
- Injection molding 192
- Inlay 182
- Inner bark 276
- Inner hearth 87
- Instant-start lamp 145
- Instrument station 247
- Insulating concrete 43
- Insulating glass 112
- Insulating gypsum lath 190
- Insulator 78
- Insurance 48
- Intaglio 182
- Integrated ceiling 31
- Intensity 38
- Intercepting drain 223
- Intercolumniation 179
- Interdome 61
- Interference 231
- Intergrown knot 278
- Interior angle 109

- Interior design 10  
 Interior panel 205  
 Interior plywood 282  
 Interior wall 266  
 Interlacing arcade 36  
 Interlocking joint 158  
 Interlocking spaces 218  
 Interlocking tile 214  
 Intermediate column 40  
 Intermediate rib 263  
 Intermediate stiffener 173  
 Internal damping 245  
 Internal dormer 274  
 Internal reflected component 150  
 International style 135  
 International System of Units 166  
 Intersecting arcade 36  
 Interstice 218  
 Interstitial 239  
 Intertriglyph 180  
 Interval 55  
 Intonaco 189  
 Intrados 12  
 Intuition 59  
 Intumescent paint 88  
 Inverse-square law 142  
 Inverted tee 206  
 Invisible hinge 115  
 Involute 110  
 Ion 161  
 Ionic bond 161  
 Ionic order 181  
 IR lamp 144  
 Iron 170  
 Irregular grid 239  
 Irregular mass 244  
 Irregular structure 244  
 Islam 131  
 Islamic architecture 131  
 Isobar 102  
 Isocephalic 73  
 Isochart 146  
 Isolated footing 101  
 Isolation joint 178  
 Isolation mount 232  
 Isolux line 146  
 Isometric 71  
 Isometric projection 71  
 Isosceles 109  
 Isostatic plate 194  
 Isostatics 194  
 Isotropic 162  
 Italian Renaissance architecture 132  
 Ivan 252  
 Iwan 252  
  
**Jj**  
 Jack 206, 211  
 Jack arch 14  
 Jacking force 206  
 Jack rafter 211  
 Jalousie 273  
 Jalousie window 273  
 Jamb 63  
 Jamb anchor 65  
 Jamb block 160  
 Jambstone 159  
 Japanese architecture 131  
 Japanese lacquer 187  
 J-bolt 84  
 Jerkinhead 208  
 Jerusalem cross 183  
 Jib door 64  
 Joggle 140, 210  
 Joggle piece 210  
 Joggle post 210  
 Joinery 140  
 Joint compound 191  
 Joint filler 178  
 Joint movement 178  
 Joint reinforcement 157  
 Joint sealant 178  
 Joint tape 191  
 Joist 92  
 Joist anchor 85  
 Joist band 204  
 Joist girder 173  
 Joists and planks 279  
 Joist slab 204  
 Joule 167  
 Joule's law 74  
 Judas 114  
 Judas hole 114  
 Judgment 58  
 Jugendstil 134  
 Jumbo brick 19  
 Junction box 78  
 Jutty 107  
 Juxtaposition 54  
  
**Kk**  
 Ka'aba 252  
 Kairo 255  
 Kakemono 137  
 Kalamein door 65  
 Kaolin 32  
 Kasuga-zukuri 255  
 Katsuogi 255  
 K-brace 243  
 Keel 185  
 Keene's cement 188  
 Keep 99  
 Kelvin 117  
 Kelvin scale 117  
 Ken 137  
 Kerf 31  
 Kerfing 186  
 Kern 41  
 Kern area 41  
 Kern point 41  
 Key 66, 116, 141, 189, 263  
 Key course 262  
 Keyed joint 141  
 Keyhole 116  
 Key pattern 184  
 Keystone 12  
 Key switch 79  
 Keyway 45, 116  
 Khmer 253  
 Kibla 252  
 Kick plate 114, 235  
 Kiln 18  
 Kiln-dried 277  
 Kilocalorie 117  
 Kilogram 167  
 Kilogram calorie 117  
 Kilometer 166  
 Kilowatt 74  
 Kilowatt-hour 74  
 Kinesthesia 57  
 Kinetic theory of heat 165  
 Kingbolt 261  
 King closer 20  
 King post 210  
 King rod 261  
 King truss 210  
 Kip 167  
 Kite winder 234  
 Kiva 136  
 Knee 105  
 Knee brace 243  
 Kneeler 159  
 Knee wall 211  
 Knife-blade fuse 76  
 Knife switch 79  
 Knitted carpet 95  
 Knob-and-tube wiring 79  
 Knockdown frame 65  
 Knocker 114  
 Knockout 78  
 Knot 278  
 Knuckle 115  
 Kodo 255  
 Kondo 255  
 Koran 252  
 Kraft paper 119  
 Kung 254  
  
**Ll**  
 Label 159  
 Labeled 89  
 Labyrinth 37  
 Lac 187  
 Laced valley 212  
 Lacing 174  
 Lacquer 187  
 Lacunar 30  
 Ladder 233  
 Lady chapel 37  
 Lag 12  
 Lag bolt 83  
 Lagging 221  
 Lag screw 83  
 Laitance 46  
 Lally column 174  
 Lamassu 248  
 Lambert 142  
 Lambert's law 142  
 Lamella 195  
 Lamella roof 195  
 Laminate 193  
 Laminated block 94  
 Laminated glass 112  
 Laminated veneer lumber 284  
 Lamp 144

- ul style="list-style-type: none; padding-left: 0;">
- lamp base 144
- lamp diameter 144
- lamp holder 144
- lamp lumens depreciation 149
- lamp socket 144
- lanal 25
- lancet arch 14
- landing 80, 234
- landing bread 235
- landscape architecture 11
- land survey 246
- lantern 61, 81
- lap dovetail 141
- lap joint 141
- lap siding 268
- lap splice 203
- lap weld 86
- large calorie 117
- Lascaux Cave 128
- lat 253
- latch 116
- latchbolt 116
- latent heat 117
- lateral bracing 41, 243
- lateral buckling 16
- lateral load 152
- lateral reinforcement 203
- lateral stability 243
- late wood 276
- latex 187
- latex paint 187
- lath 190
- Latin cross 183
- latitude 226
- lattice 27, 161
- lattice dome 60
- lattice truss tube 245
- lavatory 198
- law of action and reaction 97
- law of inertia 97
- law of reflection 143
- layer board 209
- L-beam 206
- leach 201
- lead 79, 175
- leader 68, 122, 209
- leader head 209
- lead wedge 177
- leaf 62, 115
- lean mix 157
- lean-to 208
- lean board 209
- ledger 267
- ledger beam 206
- ledger strip 267
- leeward 154
- left-hand 114
- left-hand reverse 114
- legal description 246
- lending institution 48
- length 166
- lengthening joint 140
- lens 146
- lenticular structure 28
- Lesbian cyena 185
- let in 267
- letter slot 114
- level 247
- leveling 247
- leveling rod 247
- lever 97
- lever handle 116
- lever operator 273
- lever tumbler 116
- lewis 156
- lewis bolt 84
- Lexan 192
- licensed 48
- lierne 263
- lift 45, 80
- lift-off hinge 115
- lift-slab construction 50
- lift stage 257
- light 142, 271
- light center length 144
- light frame construction 106
- light framing 279
- lighting 148
- lighting fixture 146
- light loss factor 149
- lightness 38
- lightning arrester 77
- lightning rod 77
- light strip 147
- lightweight block 160
- lightweight concrete 43
- light wood frame construction 51
- lignin 276
- lime 157
- lime mortar 157
- lime plaster 188
- lime putty 188
- limestone 236
- limit design 240
- limit switch 80
- line 52, 66, 108
- linear diffuser 31
- linear metal ceiling 31
- linear organization 218
- linear perspective 72
- linear source 147
- linear structure 238
- line drop 75
- line of action 96
- line of thrust 13
- line of travel 234
- line voltage 75
- lingdao 254
- link dormer 209
- linked spaces 218
- linoleum 95
- lintel 266
- lintel block 160
- lip 116
- liquefaction 153
- liquid-filled column 88
- liquid limit 225
- list 185
- liter 166
- live 76, 230
- live knot 278
- live load 151
- liwan 252
- load 77, 124, 151
- load balancing 207
- load-bearing partition 266
- load-bearing wall 266
- load combination 151
- load factor 77
- load-factor design 240
- load flow 241
- load reduction 151
- load strip 241
- load trace 241
- loom 224
- lobby 258
- local buckling 259
- local color 70
- local lighting 148
- local symmetry 55
- lock 116
- locking handle 273
- lock nut 84
- lock rail 64
- lock seam 214
- lockset 116
- lock stile 64
- lockstrip gasket 113
- lock washer 84
- loess 224
- loft 22, 36
- loft building 22
- log 277
- logarithm 229
- loge 258
- loggia 26
- Lombard architecture 131
- long-and-short work 158
- long column 40
- longhouse 136
- longitude 226
- longitudinal reinforcement 203
- longitudinal section 70
- longitudinal shrinkage 277
- long-life lamp 144
- lookout 211
- loom 79
- loophole 99
- loop pile 95
- loop vent 200
- loose-fill insulation 119
- loose fit 216
- loose-joint hinge 115
- loose knot 278
- loose-pin hinge 115
- loss of prestress 206
- lotus 184
- lotus capital 249
- loudness 229
- lounge 258
- louver 64, 107, 146
- louvered ceiling 31
- louvered door 64
- low-e glass 112
- low-emissivity glass 112



- low-lift grouting 157  
 low-key 66  
 low-pressure laminate 193  
 low-pressure sodium lamp 145  
 low relief 182  
 low-rise 22  
 lowside window 274  
 low-voltage 77  
 LPS lamp 145  
 L sill 267  
 L stair 234  
 lucarne 61, 274  
 Lucite 192  
 lug sill 271  
 lumber 277  
 lumen 142  
 lumen method 149  
 luminaire 146  
 luminaire dirt depreciation 149  
 luminaire efficiency 146  
 luminance 142  
 luminous ceiling 31  
 luminous flux 142  
 luminous intensity 142  
 lunette 61  
 luthern 274  
 lux 142  
 lychnoscope 274
- Mm**  
 machicolation 99  
 machine beam 80  
 machine bolt 84  
 machine burn 278  
 machine rating 280  
 machine room 81  
 machine screw 83  
 machine stress-rating 280  
 made ground 222  
 madrasah 252  
 Magen David 28  
 magnesium 175  
 magnetic north 246  
 maldan 252  
 mall slot 114  
 main 122, 197  
 main member 241  
 main runner 31  
 maintenance factor 149  
 major axis 110  
 maksoorah 252  
 malachite 236  
 male 199  
 malleable 170  
 malleable cast iron 170  
 Maltese cross 183  
 mandapa 253  
 mandira 253  
 mandorla 183  
 mandrel 103  
 manganese 175  
 manganese bronze 175  
 manhole 223  
 manifold 122  
 Mannerism 133  
 mansard 208  
 mansard roof 208  
 mantel 87  
 mantelpiece 87  
 manteltree 87  
 marble 236  
 margin 212  
 marigold window 36  
 marine varnish 187  
 marquee 258  
 mascaron 183  
 mashrebeeyeh 274  
 masjid 252  
 mask 183  
 Masonite 284  
 masonry 155  
 masonry arch 12  
 masonry cement 157  
 masonry nail 82  
 mass 67, 167, 217  
 massing 52  
 mast 29  
 mastaba 249  
 Masterformat 50  
 mastic 95, 176  
 mat 101  
 matched lumber 279  
 matching 283  
 material 161  
 matter 161  
 Maurya 129  
 maximum demand 77  
 maximum overall length 144  
 Maxwell diagram 260  
 Mayan architecture 130  
 meander 184  
 mean radiant temperature 120  
 means of egress 91  
 measure 166  
 measuring point 73  
 Mecca 252  
 mechanical bond 190  
 mechanical drawing 68  
 mechanical equipment room 125  
 mechanical equivalent of heat 167  
 mechanical property 162  
 mechanical scale 56  
 mechanical system 121  
 mechanical ventilation 127  
 mechanics 97  
 medallion 183  
 mediating space 218  
 Medieval architecture 130  
 medium-density overlay 282  
 medium-range sealant 178  
 medium steel 170  
 meeting rail 272  
 meeting stile 64, 273  
 megalith 248  
 megaron 250  
 medan 252  
 melamine resin 193  
 melon dome 252  
 membrane 168  
 membrane stresses 219  
 menhir 248  
 mercury lamp 145  
 mercury switch 79  
 mercury-vapor lamp 145  
 merge 27  
 meridian 226  
 meridional force 60  
 meridional line 60  
 merlon 99  
 mesa 136  
 mesh 172  
 meshrebeeyeh 274  
 Mesoamerica 130  
 Mesopotamia 128  
 metal 169  
 metal decking 93  
 metal lath 190  
 metallic bond 161  
 metal pan 31  
 metamorphic rock 236  
 metaphor 59  
 meter 166  
 metes and bounds 246  
 metes-and-bounds survey 246  
 method of joints 260  
 method of sections 260  
 metope 180  
 metric sabin 231  
 metric system 166  
 metric ton 167  
 mew 139  
 meydan 252  
 mezzanine 23, 258  
 mezzo-relievo 182  
 Microlam 284  
 micrometer 166  
 micron 166  
 micropascal 229  
 Middle Ages 130  
 middle strip 204  
 middle-third rule 41  
 mid-rise 22  
 mihrab 252  
 mil 166  
 mildew 176  
 mild steel 170  
 mile 166  
 mill construction 51  
 mill finish 169  
 milliliter 166  
 millimeter 166  
 mill scale 169  
 mimbar 252  
 minaret 252  
 mineral-insulated cable 78  
 mineral spirits 187  
 mineral wool 119  
 Minoan architecture 128  
 minor axis 110  
 minster 132  
 minute 108  
 miscellaneous channel 172  
 Mission Style 134  
 mission tile 214  
 mist coat 187

- ul style="list-style-type: none; padding-left: 0;">
- miter 140
- miter dovetail 141
- mitered halving 141
- miter joint 140
- mix design 44
- mixed grain 278
- mixer 197
- mixing box 126
- mixing faucet 197
- mixing ratio 120
- mixing valve 199
- mixing water 43
- Mixtec architecture 131
- moat 99
- Moche 129
- Mochica 129
- mock-up 58
- model 58, 59
- model code 51
- modeling 66
- modernism 135
- Modernismo 134
- modify 58
- modillion 181
- modular brick 19
- modular coordination 50
- modular design 50
- module 50, 56
- modulus of elasticity 164
- modulus of rigidity 163
- modulus of torsion 163
- Mogen David 183
- Mogul architecture 133
- Mohammed 131, 252
- Mohs' scale 165
- moisture content 277
- moisture expansion 165
- moisture protection 176
- mold 169, 185
- molded insulation 199
- molded polystyrene 119
- molding 185
- molding plaster 189
- mole 161
- molecular weight 161
- molecule 161
- Molly 84
- moment 96
- moment arm 96
- moment center 96
- moment connection 174
- moment diagram 17
- moment distribution method 105
- moment of inertia 16
- moment-resisting frame 104, 244
- Monel metal 214
- monochromatic 39
- monolith 248
- monolithic terrazzo 94
- monomer 192
- monopteron 251
- monotony 54
- Moor 131
- Moorish arch 14
- Moorish architecture 131
- mopboard 186
- mortar 157
- mortise 141
- mortise-and-tenon joint 141
- mortise hinge 115
- mortise joint 141
- mortise lock 116
- mortuary temple 249
- mosaic 182
- Moslem 252
- mosque 252
- motif 184
- motte 98
- motte and bailey 98
- mouchette 275
- moulding 185
- movable partition 266
- movement 55, 66
- moving load 151
- moving sidewalk 81
- moving staircase 81
- moving stairway 81
- Mozarabic style 131
- MR bulb 144
- M-shape 172
- Mudéjar 132
- Mudéjar architecture 132
- mudsill 267
- Muhammad 131
- Muhammadanism 131
- mullion 62, 268, 271
- multibay frame 105
- multifamily 139
- multifoil 275
- multi-outlet assembly 78
- multistory frame 105
- multizone system 126
- Munsell System 38
- muntin 64, 271
- Muntz metal 175
- muqarna 252
- mural 182
- mushroom construction 205
- musjid 252
- Muslim 252
- Muslim architecture 131
- mutule 180
- Mycenaean architecture 129
- Mylar 193
- Nn**
- Nagare-zukuri 255
- nail 82
- nailing strip 82
- nandaimon 255
- nanometer 142
- naos 250
- Nara 131
- narthex 35
- natural cement 42
- natural grade 222
- natural period of vibration 152
- natural rubber 193
- natural ventilation 127
- nautical mile 166
- naval brass 175
- nave 35
- neat plaster 188
- necessarium 99
- neck 84
- necking 180
- necropolis 249
- needle 222
- needle beam 222
- needlepunched carpet 95
- negative friction 102
- negative ion 161
- negative moment 17
- negative shear 17
- Neo-Babylonian architecture 129
- Neoclassicism 133
- Neolithic 128
- neon lamp 145
- neoprene 193
- net cross-sectional area 160
- net structure 168
- net tracery 275
- neutral 76
- neutral axis 15
- neutron 161
- newel 81, 234, 235
- newel cap 235
- newel drop 235
- newel post 235
- New Kingdom 249
- newton 167
- newton-meter 167
- Newton's first law of motion 97
- Newton's second law of motion 97
- Newton's third law of motion 97
- N-grade 282
- nickel 175
- nimbus 183
- nipple 199
- noble gas 161
- noble metal 171
- node 259
- nog 107
- nogging 107
- noise 231
- noise criteria curve 231
- noise reduction 231
- noise reduction coefficient 231
- nominal dimension 19, 277
- nominal size 277
- nonbearing partition 266
- nonbearing wall 266
- noncombustible construction 51
- nonconcurrent forces 96
- nonconforming 51
- nonferrous metal 175
- non-heat-treatable alloy 175
- non-load-bearing partition 266
- non-load-bearing wall 266
- nonmetallic sheathed cable 78
- nonobjective 52
- nonparallel system 244
- non-pressure-treated wood 280
- nonrecoverable light loss factor 149
- nonrepresentational 52

nonstaining mortar 157  
 nonvitreous 32  
 normal force method 154  
 normal stress 162  
 Norman architecture 131  
 Norman brick 19  
 Norman Conquest 131  
 north arrow 69  
 Norwegian brick 19  
 nosing 233, 262  
 notice to proceed 49  
 novelty sliding 268  
 nut 84  
 nylon 192

## Oo

obelisk 249  
 object line 68  
 oblate 111  
 oblate spheroid 111  
 oblique 71, 108  
 oblique projection 71  
 oblique section 70  
 obscure glass 112  
 obsidian 236  
 obtuse 109  
 obtuse angle 108  
 occupancy load 151  
 occupancy separation 89  
 occupant load 91  
 octagon 109  
 octahedron 111  
 octastyle 179  
 octave 228  
 oculus 61  
 oeil-de-boeuf 274  
 off-center 110  
 offset bend 203  
 ogee 185  
 ogee arch 14  
 ogive 263  
 ohm 74  
 Ohm's law 74  
 oil-borne preservative 280  
 oil-canning 214  
 oil furnace 121  
 oillet 99  
 oil of turpentine 187  
 oil paint 187  
 oil stain 187  
 oil varnish 187  
 olfactory 57  
 olive hinge 115  
 olive knuckle hinge 115  
 Olmec architecture 129  
 on center 267  
 one-point perspective 73  
 one-sheet hyperboloid 220  
 one-way 238  
 one-way slab 204  
 onion dome 36  
 oolite 236  
 opaque 143  
 opaque stain 187  
 open boarding 213

open cornice 213  
 open eaves 213  
 open-end block 160  
 open grain 278  
 opening leaf 62  
 open mortise 141  
 open plan 216  
 open riser 235  
 open-riser stair 235  
 open slating 213  
 open string 235  
 open-string stair 235  
 open-timbered 107  
 open valley 212  
 open-web steel joist 173  
 openwork 182  
 opera house 258  
 operable window 273  
 opisthodomos 250  
 opposition 54  
 optical illusion 264  
 optical mixing 38  
 optical plummet 247  
 optimum moisture content 225  
 opus Alexandrinum 182  
 opus sectile 182  
 opus vermiculatum 182  
 orchestra 256, 258  
 orchestra pit 257  
 orchestra shell 257  
 order 12, 54  
 ordinary construction 51  
 ordinate 108  
 organic 52  
 Organic architecture 135  
 organic soil 224  
 organization 53  
 oriel 274  
 orientation 27, 264  
 oriented strandboard 284  
 originality 59  
 ornament 182  
 orthogonal projection 69  
 orthographic projection 69  
 oscillate 152  
 oscillation 152  
 Osirian column 249  
 Ottoman architecture 132  
 Ottonian architecture 131  
 oublette 99  
 outer hearth 87  
 outlet 79  
 outlet box 79  
 outline 66  
 outlook 217  
 outrigger 211  
 outside air 125  
 outwork 98  
 oval head 83  
 oven-dry 277  
 overburden 221  
 overcast sky 150  
 overcloak 214  
 overdoor 63  
 overflow 198

overhanging beam 17  
 overhead concealed closer 114  
 overhead door 62  
 overreinforced section 202  
 overturning moment 153  
 ovolo 185  
 owner 48  
 oxye 274  
 oxidation 171  
 oxide 171  
 oyelet 99

## Pp

pace 234  
 packaged air conditioner 124  
 pagoda 254  
 pal-lou 254  
 paint 187  
 paint system 187  
 palazzo 26  
 pale 38, 98  
 pallsade 98  
 Palladiana 94  
 Palladian motif 274  
 Pallava 130  
 palm capital 249  
 palmette 184  
 pan 204  
 pan-and-roll tiling 214  
 pane 271  
 panel 50, 64, 76, 204, 259, 268  
 panelboard 76  
 panel clip 212  
 panel grade 282  
 paneled door 64  
 panel heating 123  
 paneling 268  
 panel length 259  
 panel load 259  
 panel point 259  
 panel strip 204  
 panel system 269  
 panel wall 156  
 panhead 83  
 panic bar 116  
 panic bolt 116  
 panic hardware 116  
 pantheon 251, 253  
 pantile 214  
 pan tread 235  
 paper-backed lath 190  
 parabola 110, 111  
 parabolic reflector 146  
 parabolic surface 220  
 paraboloid 219  
 paradise 37  
 parallel drawing 71  
 Parallax 284  
 parallax 264  
 parallel 74, 108  
 parallel-chord truss 261  
 parallel forces 96  
 parallelogram 109  
 parallelogram law 96  
 parallel strand lumber 284

- parapet 98, 266
- parapet skirting 177
- parascenium 256
- PAR bulb 144
- parquet 87, 176, 189
- parquetry 87, 189
- parquing 176
- parliament hinge 115
- parados 256
- parquet 94
- parquet circle 258
- parquetry 94
- parterre 27, 258
- Parthian architecture 129
- parti 53
- partial-penetration weld 86
- partial prestressing 206
- particleboard 284
- particle-size distribution 43
- parting bead 272
- parting compound 45
- parting strip 272
- partition 266
- partition block 160
- party wall 266
- pascal 167
- passage 67
- passage grave 248
- passenger elevator 80
- passing 177
- passive earth pressure 100
- passive solar heating 227
- pass-through 274
- pastiche 183
- Paternoster 185
- path 218
- patina 175
- patio 26
- pattern 53, 265
- patterned glass 112
- patterned lumber 279
- paumelle 115
- pavement saw 47
- pavertile 33
- pavilion 24, 27
- pavilion roof 208
- P-delta effect 41
- pea gravel 224
- peanut gallery 258
- pearlite 43
- pearl molding 185
- pebble 224
- pebble dash 189
- pecky 278
- pedestal 179
- pedestal pile 103
- pediment 250
- Peg-Board 284
- pendant 147, 263
- pendant post 210
- pendentive 61
- pendentive bracketing 252
- pendentive dome 61
- penetrating stain 187
- penetration resistance 225
- penetration test 225
- penny 82
- pent 208
- pentagon 109
- pentastyle 179
- penthouse 80, 139, 208
- pentice 208
- people mover 81
- percentage reinforcement 202
- perception 265
- perched water table 223
- percolation test 201
- perforated gypsum lath 190
- perforated shell tube 245
- perforated tracery 275
- performance specification 50
- pergellisol 224
- pergola 27
- perimeter heating 122
- perimeter loop system 122
- perimeter radial system 122
- period 152
- periodic motion 152
- periodic table 161
- peripteral 251
- peristyle 137
- perlite 43
- perm 176
- permafrost 224
- permanent set 164
- permeability 225
- permeance 176
- perpend 158
- Perpendicular style 132
- perpendicular tracery 275
- Perslan 129
- Persian architecture 129
- personal distance 57
- personal space 57
- perspective 59, 72, 73
- perspective projection 72
- pervious soil 225
- petcock 123
- phantom 71
- phantom line 71
- pharaoh 249
- phase 58, 76, 228
- phenolic resin 193
- phenoplast 193
- Phillips head 83
- phloem 276
- phon 229
- phosphor 145
- phosphor bronze 175
- photochemical 187
- pi 110
- piano hinge 115
- piano nobile 26
- piazza 27
- pickle 171
- pictograph 182
- pictorial space 72
- picture mold 186
- picture plane 72
- picture rail 186
- picture window 274
- plend 185
- pler 103, 266
- plg 170
- plg iron 170
- pligment 187
- pligmented stain 187
- plgtail 79
- plaster 266
- plaster block 160
- pile 95, 102
- pile cap 103
- pile density 95
- pile driver 102
- pile eccentricity 102
- pile foundation 102
- pile ring 102
- pile tolerance 102
- pile weight 95
- pillar 40
- pilot hole 83
- piloti 26
- pin 242
- pin joint 242
- pinned connection 242
- pint 166
- pinnacle 262
- pintle 115
- pipe 199
- pipe batten 257
- pipe column 174
- pipe fitting 199
- pipe pile 102
- plsay 34
- pisé 34
- pisé de terre 34
- pitch 83, 95, 208, 228, 276
- pitched roof 208
- pitched truss 261
- pitch-faced 237
- pitching piece 235
- pitch pocket 278
- pit dwelling 136
- pith 276
- pivoted door 62
- pivoted window 273
- place 217
- placement 46
- place of beginning 246
- plafond 30
- plain lap 141
- plain rail 272
- plain-saw 278
- plain slicing 283
- plan 69
- plane 109
- plane geometry 109
- plane survey 246
- plane truss 259
- plank-and-beam construction 106
- plank flooring 94
- plank house 136
- plant 186
- planted stop 63
- plan view 69

- plaster 188
- plasterboard 191
- plaster bond 190
- plasterer's putty 188
- plaster of Paris 188
- plastic 192
- plastic deformation 164
- plastic flow 164
- plastic foam 119
- plastic hinge 104
- plasticity index 225
- plasticizer 157, 192
- plastic laminate 193
- plastic limit 225
- plastic mix 44
- plastic range 164
- plastic soil 225
- plat 246
- plate 152, 172, 194, 267
- plate action 194
- plate cut 211
- plate girder 173
- plate glass 112
- plate rail 186
- plate tracery 275
- plate tread 235
- platform frame 267
- Platonic solid 111
- plaza 27
- plenum 31, 122
- plenum barrier 232
- plenum chamber 127
- plenum ventilation 127
- Flexiglas 192
- plinth 159, 179, 186
- plinth block 186
- plinth course 159
- plot plan 69
- plug 79, 199
- plug fuse 76
- plumb 211
- plumbing 196
- plumbing fixture 198
- plumbing wall 199
- plywood 282
- pneumatic placement 46
- pneumatic riveter 86
- pneumatic structure 168
- pneumatic water supply 197
- poché 69
- pocket door 62
- pocket piece 272
- podium 250, 256
- point 54, 108, 155
- point-bearing pile 102
- pointed arch 14
- point method 149
- point of refusal 102
- point of resistance 102
- point of support 242
- point source 147
- Poisson's ratio 162
- polar angle 108
- polar axis 108
- polar coordinate system 108
- polarized 79
- pole 106
- pole construction 106
- pole house 106
- pole plate 210
- polished work 237
- polycarbonate 192
- polychromatic 39
- polyester 193
- polyethylene 192
- polygon 109
- polygon method 96
- polyhedron 111
- polymer 192
- polymerization 192
- polypropylene 192
- polystyrene 192
- polythene 192
- polyurethane 193
- polyurethane foam 119
- polyurethane varnish 187
- polyvinyl butyral 192
- polyvinyl chloride 192
- polyvinyl resin 192
- pony wall 267
- porcelain 32
- porcelain enamel 32
- porch 25
- pore 276
- portal 25, 105
- portal method 105
- portcullis 99
- porte-cochère 25
- portico 25
- portland cement 42
- portland cement mortar 33
- portland cement-lime stucco 189
- portland cement stucco 189
- positive ion 161
- positive moment 17
- positive shear 17
- post 40
- post-and-beam construction 106
- post-and-lintel construction 106
- post base 85
- post cap 85
- Postclassic 132
- postern 25, 99
- postforming 193
- postiche 183
- posticum 250
- post-modernism 135
- postoccupancy evaluation 49
- posts and timbers 279
- posttension 207
- potable water 196
- potential 74
- potential difference 74
- pound 167
- power 74, 167
- power trowel 47
- pozzolan 42
- practice 59
- Prairie School 138
- Pratt 261
- preaction system 90
- precast concrete 206
- precast concrete pile 102
- Preclassic 128
- Pre-Columbian 130
- prefabricate 50
- prefabricated flue 87
- preferred angle 233
- prefinished gypsum board 191
- preheat lamp 145
- preheater 125
- prehistoric 128
- prehung door 65
- premium grade 283
- preparation 58
- pre-posttension 207
- presbytery 37
- presentation drawing 67
- preservative 280
- pressure 167
- pressure bulb 102
- pressure coefficient 154
- pressure drop 197
- pressure-equalized design 177
- pressure forming 192
- pressure head 197
- pressure-treated wood 280
- prestress 206
- prestressed concrete 206
- pretension 206
- primary air 126
- primary beam 106
- primary cable 29
- primary color 39
- primary compression 100
- primary consolidation 100
- primary member 241
- prime coat 187
- primer 178, 187
- principal 210
- principal beam 106
- principal meridian 246
- principal rafter 210
- principal reinforcement 204
- principal stresses 16
- principle 59
- prism 111
- prismatic lens 146
- process 58
- profile 66, 185, 247
- program 58
- project 59
- projected area method 154
- projected window 273
- projection 69, 265
- projet 59
- prolate 111
- prolate spheroid 111
- promenade 27
- promenade tile 33
- pronaos 250
- proof stress 164
- property 162
- property line 221
- proportion 56

- proportional limit 164
- proposal 58
- proprietary specification 50
- propylon 249
- proscenium 256
- proscenium arch 256
- prospect 217
- prostyle 251
- protected membrane roof 215
- protected noncombustible construction 51
- protected opening 89
- protected ordinary construction 51
- protected light frame construction 51
- prosthesis 35
- proton 161
- proton number 161
- prototype 59
- proxemics 57
- proximity 54, 265
- PS bulb 144
- pseudodipteral 251
- pseudoperipteral 251
- psychrometer 120
- psychrometric chart 120
- pteroma 251
- pteron 251
- public way 91
- puddle weld 86
- pueblo 136
- pull bar 114
- pulley stile 272
- pump 125
- punching shear 205
- purfle 184
- purlin 210
- purpose 58
- push plate 114
- putty 113
- pynostyle 179
- pylon 249
- pyramid 111, 249, 252
- Pythagorean theorem 109
- Qq**
- qibla 252
- Qin 129
- quadrangle 27
- quadrant 110
- quadrilateral 109
- quadrupartite vault 263
- quarry-faced 237
- quarry tile 33
- quart 166
- quarterpace landing 234
- quarter round 185
- quartersaw 278
- quartershing 283
- quarterspace landing 234
- quarter-turn stair 234
- quartz heater 123
- quartzite 236
- quartz lamp 144
- quatrefoil 275
- Quattrocento architecture 132
- queen closer 20
- queen post 210
- queen truss 210
- quench 169
- Quetzalcoatl 131
- quicklime 157
- quirk 140, 268
- quoin 158
- Rr**
- rabbet 140
- rabbeted stop 63
- rabbet joint 140
- raceway 78
- racking 243
- radial dome 60
- radial organization 218
- radial shrinkage 277
- radial symmetry 55
- radian 108
- radiant heat 120
- radiant heating 123
- radiation 118
- radiator 123
- radius 110
- radius of gyration 40
- radius vector 108
- raft 101
- rafter 211
- rafter tail 213
- rail 64
- railing 235
- rainbow roof 208
- rainscreen 177
- rainscreen principle 177
- raised-chord truss 261
- raised flooring system 93
- raised girt 107
- raised grain 278
- raised panel 268
- raising plate 267
- rake 209, 268
- raked joint 155
- raker 221
- rake tile 214
- raking riser 233
- raking shore 221
- rambler 138
- rammed earth 34
- ramp 233, 235
- rampant arch 14
- rampant vault 263
- rampart 98
- random ashlar 158
- random matching 283
- random rubble 158
- random shingles 213
- random slates 213
- range 155, 246
- range line 246
- ranger 45
- rapid-start lamp 145
- rated life 144
- rath 253
- ratio 56
- Rationalism 134
- ravelin 98
- raw water 196
- ray 276
- Rayonnant style 132
- R bulb 144
- reactive force 97
- ready-mixed concrete 46
- ready-mixed plaster 188
- real 59
- reason 59
- rebar 202
- rebate 140
- receding color 39
- receptor 198
- recessed grid 31
- recharge 223
- recoverable light loss factor 149
- rectangle 109
- rectangular 109
- rectangular coordinate system 108
- rectangular system 246
- rectilinear 109
- Rectilinear style 132
- rectilinear tracery 275
- red brass 175
- red label 213
- reducer 199
- reduction 175
- reduction of area 162
- redundancy 105
- reeding 185
- reentrant 109
- reentrant corner 244
- reevaluation 58
- reference specification 50
- referential drawing 67
- refine 58
- reflectance 143
- reflected ceiling plan 69
- reflected color 38
- reflected glare 148
- reflected plan 69
- reflected sound 230
- reflecting surface 230
- reflection 143
- reflective glass 112
- reflective insulation 119
- reflector 146
- refraction 143
- refractory 18
- refrigerant 124
- refuge 217
- Regency style 133
- register 122
- registered 48
- reglet 177
- regula 180
- regular 54, 109, 111
- regular bowl 116
- regular grid 239
- regular structure 244
- regulating line 66
- reheat coil 126
- reinforced concrete 202
- reinforced concrete beam 203

- reinforced concrete column 203
- reinforced concrete slab 204
- reinforced grouted masonry 157
- reinforced hollow-unit masonry 157
- reinforcement 202
- reinforcing bar 202
- reinforcing edge cable 168
- relative humidity 120
- release agent 45
- relief 70, 182
- relief valve 123
- relief vent 200
- relieving arch 266
- Renaissance 132
- Renaissance architecture 132
- rendering 67
- rendering coat 189
- repetition 55
- repetitive member 280
- repetitive member factor 280
- repose 54, 217
- reproductive imagination 59
- reservoir 196
- residual stress 169
- resilient channel 232
- resilient clip 232
- resilient flooring 95
- resilient mounting 232
- resin 192, 276
- resin canal 276
- resin duct 276
- resinous matrix 94
- resistance 74
- resistance welding 86
- resisting moment 15
- resistivity 74
- resonance 152, 230
- respond 36
- restoring moment 153
- restrictive covenant 51
- resultant 96
- retaining wall 270
- retarder 43
- reticulate 184
- reticulated tracery 275
- retrochoir 37
- return 186
- return air 125
- return bend 199
- return-corner block 160
- return grille 122
- return pipe 126
- return wall 266
- reveal 63
- revent 200
- reverberation 230
- reverberation time 230
- reverse bevel 116
- reverse return 123
- reverse-trap 198
- reversible lock 116
- revet 270
- revetment 270
- revolving door 62
- rheostat 79
- rhythm 55
- rib 263
- ribband 267
- ribbed mat 101
- ribbed slab 204
- ribbed vault 263
- ribbon 267
- ribbon strip 267
- ribbon course 212
- ribbon window 274
- rib lath 190
- rib vault 263
- rich mix 157
- Richardsonian Romanesque 134
- ridge 209
- ridge beam 211
- ridge board 211
- ridgecap 212
- ridge course 212
- ridged baffle 146
- ridgepiece 211
- ridgepole 211
- ridge rib 263
- ridge roll 214
- ridge tile 214
- rift cutting 283
- right angle 108
- right circular cone 111
- right circular cylinder 111
- right-hand 114
- right-hand reverse 114
- righting moment 153
- right triangle 109
- rigid 238
- rigid arch 13
- rigid board insulation 119
- rigid connection 242
- rigid frame 104
- rigid joint 242
- rigid metal conduit 78
- rim joist 92
- rim lock 116
- ring-shank nail 82
- rip 278
- riprap 270
- ripsaw 278
- rise 12, 80, 208, 233
- riser 197, 233
- riser-tread ratio 233
- rising hinge 115
- rivet 86
- rivet set 86
- riwaq 252
- rock 236
- rock caisson 103
- rock-cut tomb 249
- rock-faced 237
- rock lath 190
- Rockwell number 165
- rock wool 119
- Rococo 133
- rod 166, 247
- rodding 46
- rolled glass 112
- roller joint 242
- roller support 242
- rolling door 62
- rollock 19
- roll roofing 215
- roll seam 214
- Roman arch 14
- Roman architecture 130
- Roman brick 19
- Romanesque architecture 131
- Roman theater 256
- Rome 130
- Romex cable 78
- rood 37
- rood screen 37
- roof 208
- roof drain 209
- roof flange 177
- roof framing 211
- roofing 212
- roofing bond 215
- roofing felt 215
- roofing nail 82
- roofing paper 215
- roofing tile 214
- roof plan 69
- room 216
- room acoustics 230
- room cavity 149
- room cavity ratio 149
- room surface dirt depreciation 149
- root 86, 141
- rose 116, 184
- rose window 37
- rosette 184
- rotary cutting 283
- rotation 97
- rotational surface 220
- roto operator 273
- rotunda 26
- rough buck 63
- roughcast 189
- rough coat 189
- rough floor 92
- rough grading 222
- rough hardware 114
- roughing-in 199
- rough lumber 277
- rough opening 63
- rough stringer 235
- round arch 14
- round head 83
- round point 82
- route 140
- row house 139
- rowlock 19
- row spacing 84
- rubber 193
- rubber-base paint 187
- rubber tile 95
- rubble 158
- ruled surface 220
- run 208, 233
- Rundbogenstil 134
- rung 233
- running bond 20

- running mold 189
- rutoff 223
- runway 258
- rustic 158
- rustication 158
- rustication strip 45
- rustic joint 158
- rustic siding 268
- rustic slates 213
- rustic terrazzo 94
- rust-inhibiting paint 187
- R-value 118
- Ss**
- sabin 231
- sack 44
- sacred 248
- sacrificial anode 171
- sacristy 35
- saddle 63, 209
- saddleback coping 266
- saddle coping 266
- saddle joint 159
- saddle surface 219
- safety curtain 257
- safety factor 240
- safety glass 112
- safety nosing 235
- safety tread 235
- safety valve 123
- safing 269
- sag 28
- sahn 252
- sailor 19
- salient 54, 109
- sally port 98
- saltbox 138
- sanctuary 35
- sanctum sanctorum 250
- sand 224
- sand clay 224
- sand-cushion terrazzo 94
- sand filter 201
- sand-float finish 189
- sand-lime brick 160
- sand pile 103
- sandstone 236
- sand-struck brick 18
- sandwich beam 281
- sandwich panel 50
- sanitary base 33
- sanitary cross 199
- sanitary sewer 200
- sanitary stop 65
- sanitary tee 199
- sanitary ware 198
- sap 276
- sapwood 276
- sarcophagus 35
- sash 271
- sash balance 272
- sash bar 271
- sash block 160
- sash chain 272
- sash cord 272
- sash fast 272
- sash fastener 272
- sash line 272
- sash ribbon 272
- sash stop 272
- sash weight 272
- Sassanian architecture 130
- satin finish 187
- saturated air 176
- saturation 38
- saturation coefficient 18
- saucer dome 60
- sawtooth roof 208
- S bulb 144
- scaffold 49
- scaffold nail 82
- scagliola 189
- scale 56, 69, 166, 169
- scalene 109
- scaling 47
- scallop 184
- scarcement 159
- scarf joint 140
- scarp 98
- scheme 59
- Schwedler dome 60
- science 11
- scissors truss 261
- sconce 147
- sconcheon 63
- scored block 160
- scotia 181
- SCR brick 19
- scratch coat 188
- screed 47, 190
- screen 266, 274
- screen block 160
- screen door 64
- screw 83
- screw eye 83
- screw nail 82
- scribbling 66
- scribed joint 140
- scrim 190
- scroll 184
- scum 201
- scum clear space 201
- scuncheon 63
- scupper 209
- scutcheon 116
- seal 68
- sealer 187
- seasoned 277
- seat 199
- seat angle 174
- seat cut 211
- seated connection 174
- seating 257
- secant 109
- second 108
- secondary beam 106
- secondary cable 29
- secondary color 39
- secondary consolidation 100
- secondary member 241
- secondary stresses 259
- secret dovetail 141
- section 70, 246
- section line 70
- section modulus 16
- sector 110
- secular 248
- security glass 112
- sedimentary rock 236
- see 264
- seepage pit 201
- segmental arch 14
- segregation 46
- seismic 152
- seismic coefficient 153
- seismic force 152
- seismic joint 244
- seismic zone factor 153
- select 58
- selective absorption 38
- self-centering lath 190
- self-closing fire assembly 89
- self-furring lath 190
- self-tapping screw 83
- Seljuk architecture 132
- selvage 116, 215
- semicircular dome 60
- semidetached dwelling 138
- semidirect lighting 148
- semidome 61
- semigloss 187
- semi-indirect lighting 148
- semivitreous 32
- sensible heat 117
- septic tank 201
- serdab 249
- serendipity 59
- serial distribution 201
- series 74
- Serlian motif 274
- serpentine 236
- service 75
- service conductor 75
- service drop 75
- service entrance conductor 75
- service equipment 75
- service lateral 75
- service load 240
- service pipe 196
- service raceway 78
- service sink 198
- service switch 76
- service temperature 193
- set 47, 82
- setback 221
- set screw 83
- setting block 113
- setting shrinkage 47
- settlement 100
- settlement load 151
- set-up 247
- severy 262
- sewage 200
- sewage treatment plant 201
- sewer 200



- sexpartite vault 263
- Sezession 134
- sgraffito 182
- shade 39,70
- shades and shadows 70
- shading 66
- shading coefficient 112
- shadow 70
- shadow block 160
- shaft 179,262
- shaft grave 248
- shake 213,278
- shallow foundation 100
- Shang 128
- shank 82
- shape 52
- shear 163
- shear center 16
- shear diagram 17
- shear force 163
- shear head 205
- shearing force 163
- shearing resistance 225
- shearing strain 163
- shearing strength 225
- shearing stress 163
- shear modulus 163
- shear plate 85,173
- shear strain 163
- shear stress 163
- shear stud 93
- shear wall 243
- sheath 207
- sheathing 212,268
- sheath pile 221
- she bolt 45
- shed dormer 209
- shed roof 208
- sheet glass 112
- sheeting 192
- sheet metal 172
- sheet-metal screw 83
- sheet pile 221
- Sheetrock 191
- shell 21,161,219
- shellac 187
- shellac varnish 187
- shelter 136
- shielded cable 78
- shielded metal arc welding 86
- shielding angle 146,273
- Shimmet-zukuri 255
- shiner 19
- shingle 212
- Shingle style 134
- shingle tile 214
- Shinto 255
- ship lap 268
- ship's ladder 233
- shock 76
- shoe 102,186,209,259,267
- shoin 137
- shoin-zukuri 137
- shoji 137
- shoplumber 279
- shore 221
- shoring 221
- shoro 255
- short 76
- short circuit 76
- short column 40
- short ton 167
- shotcrete 46
- shot-sawn 237
- shoulder 98,141
- shoulder miter 140
- shoved joint 155
- shower 198
- shreadhead 208
- shrinkage 277
- shrinkage limit 225
- shrinkage reinforcement 204
- shrink-mixed concrete 46
- shutoff valve 196
- shutter blind 227
- shutter panel 227
- shutting stile 64
- siamese 90
- side cut 211
- sidelap 212
- sidelight 63,148
- slidesway 104
- sliding 268
- slightline 72,258
- slin 52
- sikhara 253
- sikra 253
- siliceous 42
- silicon 175
- silicon bronze 175
- silicone 193
- silicone rubber 193
- sill 63,267
- sill anchor 85
- sill block 160
- sillcock 197
- sill plate 267
- sill sealer 267
- sit 224
- similar 109
- similarity 54,265
- simple beam 17
- simulate 58
- simultaneous contrast 265
- sine 109
- single-acting door 62
- single-bay frame 105
- single-bevel weld 86
- single-curvature structure 29
- single-duct system 126
- single-hung window 272
- single-phase 76
- single-strength glass 112
- single tee 206
- single-vee weld 86
- sink 198
- sinking 115
- siphon-jet 198
- siphon-vortex 198
- site 221
- site coefficient 153
- site drainage 223
- site plan 69
- sitework 221
- SI unit 166
- sixteenpenny nail 82
- size-adjusted value 280
- sized slates 213
- size factor 280
- size perspective 72
- skeleton construction 106
- skene 256
- sketch 67
- skew 159
- skew arch 12
- skewback 14
- skew corbel 159
- skew grid 195
- skew lines 108
- skim coat 188
- skin friction 102
- skip 278
- skip sheathing 213
- skirt 186,271
- sky component 150
- skylight 150,209
- skyscraper 22
- slab 26
- slab on grade 101
- slag 170
- slaked lime 157
- slat block 94
- slate 236
- slating nail 213
- sleepers 94
- slenderness ratio 40
- sliding 154
- sliding door 62
- sliding sash 272
- slip 37
- slip form 45
- slip matching 283
- slip mortise 141
- slipped grid 239
- slip sill 271
- slope of grain 280
- slop sink 198
- slot diffuser 31
- slot mortise 141
- slotted head 83
- sludge 201
- sludge clear space 201
- slump 44
- slump block 160
- slump cone 44
- slump test 44
- slurry wall 221
- slype 37
- small calorie 117
- smalto 182
- smelt 170
- smoke chamber 87
- smoke detector 90
- smoke-developed rating 88
- smoke dome 87

- ul style="list-style-type: none; padding-left: 0;">
- smokeproof enclosure 91
- smoke shelf 87
- smokestack 87
- smoke vent 89
- snap tie 45
- snow load 151
- soap 19
- soapstone 236
- society 128
- sociology 11
- socket 79
- socketed caisson 103
- sod house 136
- sodium lamp 145
- sodium-vapor lamp 145
- soffit 180
- soft-burned 32
- softening point 193
- soft joint 156
- soft light 148
- soft-mud process 18
- soft steel 170
- soft story 244
- softwood 276
- soil 224
- soil analysis 224
- soil binder 270
- soil class 224
- soil mechanics 225
- soil pipe 200
- soil pressure 100
- soil profile 224
- soil stabilizer 270
- soil stack 200
- soil structure 225
- soil vent 200
- solar 107
- solar collector 226
- solar constant 226
- solar energy 226
- solar-heating system 226
- solar house 226
- solar orientation 226
- solar path diagram 226
- solar screen 227
- solder 86
- soldier 19
- soldier beam 221
- soldier course 20
- soldier pile 221
- sole 267
- solepiece 267
- soleplate 267
- solid 111, 161
- solid angle 142
- solid block flooring 94
- solid bridging 92
- solid column 281
- solid-core door 65
- solid flat slab 206
- solid geometry 111
- solidify 161
- solid masonry 156
- solid masonry unit 160
- solid-top block 160
- sollar 107
- solvent 187
- sone 229
- Sonotube 45
- sorin 255
- sound 228
- sound-absorbing masonry unit 160
- sound grade 283
- sound-insulating door 65
- sound insulation 232
- sound intensity 229
- sound-intensity level 229
- sound isolation 232
- sound knot 278
- sound level meter 229
- sound power 229
- sound-power level 229
- sound pressure 229
- sound-pressure level 229
- soundproof 230
- sound transmission class 232
- sound wave 228
- space 217
- spaced column 281
- spaced sheathing 213
- spaced slating 213
- space frame 195
- space heater 123
- space heating 121
- space planning 10
- spacer 45, 113
- space truss 195
- spacing criteria 149
- spading 46
- spalling 47
- span 15
- spandrel 12, 269
- spandrel beam 269
- spandrel glass 112, 269
- spandril 12, 269
- Spanish tile 214
- span rating 282
- spark arrester 87
- spark gap 77
- spar varnish 187
- spat 65
- spatial edge 72
- spatter dash 189
- specialty panel 282
- specifications 50
- specific conductance 74
- specific gravity 167
- specific heat 117
- specific humidity 120
- specific resistance 74
- specific volume 167
- spectral distribution curve 145
- spectrum 38
- specular 143
- speculation 59
- speculative builder 48
- speed of sound 228
- sphere 111
- spherical surface 220
- spheroid 111
- sphinx 249
- spigot 197, 199
- spike 82
- spike-and-ferrule 209
- spike grid 85
- spill 147
- spill light 147
- spindle 116
- spiral 110
- spiral column 203
- spiral reinforcement 203
- spiral stair 234
- spire 36
- spirit level 247
- spirits of turpentine 187
- spirit stain 187
- spirit varnish 187
- splash block 209
- splay 63, 185
- splayed coping 266
- splice plate 174
- spline 31, 140
- split 278
- split complementary 39
- split-face block 160
- split-faced 237
- split-level 138
- split-ring 85
- spot 147, 257
- spot elevation 247
- spotlight 147, 257
- spray-on fireproofing 88
- spread 122
- spreader 45
- spread footing 101
- spring 113
- spring 12
- spring balance 272
- spring equinox 226
- springer 12
- spring hinge 115
- springing 12
- spring steel 170
- springwood 276
- sprinkler head 90
- sprinkler system 90
- sprinklered 90
- sprocket 213
- spur 183
- square 109, 212
- squared rubble 158
- square head 84
- square measure 166
- square splice 140
- squinch 61
- S-shape 172
- stability 243
- stabilizer 192
- stabilizing moment 153
- stack 122, 200
- stack bond 20
- stack partition 199
- stack vent 200
- stadia 247
- stadia rod 247

- staff bead 271
- stage 257
- stagehouse 257
- staggered course 212
- staggered joints 212
- staggered-stud partition 232
- staging 49
- stain 187
- stained glass 37
- stainless steel 170
- stair 233
- staircase 235
- stairhead 233
- stair headroom
- stair lift 81
- stair rod 235
- stairway 233
- stairwell 233
- stalactite work 252
- stamba 253
- stanchion 235
- standing leaf 62
- standard atmosphere 167
- Standard Building Code 51
- standard candle 142
- standard hook 202
- standard pipe 172
- standard terrazzo 94
- standby generator 75
- standing seam 214
- standing wave 231
- standpipe 90
- staple 82
- star 183
- Star of David 183
- starter 145
- starter tile 214
- starting course 212
- star vault 263
- statically equivalent 97
- static fit 57
- static load 151
- static load test 102
- statics 97
- station 247
- station point 72
- statute mile 166
- stave church 36
- Steamboat Gothic 134
- steam heating 123
- steam trap 123
- sealite 236
- steel 170
- steel beam 173
- steel column 174
- steeple 36
- Steiner tunnel test 88
- stela 250
- stellar vault 263
- step 233
- step-down transformer 75
- step flashing 177
- stepped flashing 177
- stepped footing 101
- stepped ramp 233
- stepping off 211
- step-up transformer 75
- steradian 142
- stereobate 250
- Stick style 134
- stick system 269
- stiffback 45
- stiffener 173
- stiff mix 44
- stiff-mud process 18
- stiffness 164
- stile 64
- Stile Liberty 134
- stilt 106
- stilted arch 14
- stilted vault 263
- stipple-troweled finish 189
- stippling 66
- stirrup 203
- stoa 250
- stone 236
- Stone Age 128
- Stonehenge 248
- stoneware 32
- stool 271
- stoop 25
- stop 63, 186, 272
- stop bead 272
- stop chamfer 140
- stopped dado 140
- stopped mortise 141
- storm cellar 23
- storm door 64
- storm drain 223
- storm sewer 223
- storm window 274
- story 22, 24
- story drift 153
- story shear 153
- stovebolt 84
- stovepipe 121
- straight flight 234
- straight-run stair 234
- straight-split shake 213
- strain 162
- strain gauge 162
- strain-hardening range 164
- straining beam 210
- straining piece 210
- straining sill 210
- strain-rate effect 165
- strand 206
- strap footing 101
- strap hinge 115
- strapwork 184
- stratification 46
- stratum 224
- strength 162
- strength of materials 162
- stress 162
- stress concentration 163
- stress design 240
- stressed-skin panel 50
- stress grade 280
- stress relaxation 165
- stress relieving 169
- stress reversal 259
- stress-strain diagram 164
- stress trajectories 16
- stretcher 19
- stretcher block 160
- stretcher bond 20
- stretching course 20
- stria 180
- strike 116
- strike plate 116
- string 235
- stringboard 235
- string course 159
- stringer 92, 235
- strip 83
- strip flooring 94
- strip footing 101
- strip lath 190
- strongback 45
- struck joint 155
- structural analysis 240
- structural clay tile 34
- structural design 240
- structural dimension 57
- structural facing tile 34
- structural failure 240
- structural grid 239
- structural insulating roof deck 215
- structural lightweight concrete 43
- structural lumber 279
- structural member 238
- structural pattern 239
- structural rating 240
- structural sealant 113
- structural sheathing 268
- structural steel 173
- structural tee 172
- structural tubing 172
- structural unit 239
- structure 53, 238
- structure-borne sound transmission 232
- strut 238
- stub tenon 141
- stucco 189
- stud 267
- studio apartment 139
- stud partition 267
- stud wall 267
- study 67
- stupa 253
- style 128
- Style Moderne 135
- stylobate 250
- Styrofoam 119
- subbasement 23
- subcasing 63
- subcontractor 48
- subdiagonal 261
- subfloor 92
- subgrade 222
- submerged arc welding 86
- subpurlin 210
- subsoil 271
- subsoil 224

- substation 75
- subtractive color 38
- substrate 101, 178
- substratum 101
- substructure 21
- subsurface drainage 223
- subsurface investigation 225
- subsurface sand filter 201
- subtractive 52
- suction 18, 190
- suite 216
- sulfate action 42
- Sumerian architecture 128
- summer 107
- summer solstice 226
- summertree 107
- summerwood 276
- sump 200
- sump pump 200
- sun control 227
- sun deck 227
- sunk draft 237
- sunk panel 268
- sunk relief 182
- sunlight 150
- sun parlor 227
- sun porch 227
- sunroom 227
- sunshade 227
- supercolumniation 256
- superplasticizer 43
- superstructure 21
- supply air 125
- supply pipe 126
- support condition 242
- surbased arch 14
- surcharge 270
- surface 111
- surface-active agent 43
- surface-active structure 238
- surface bonding 160
- surface condensation 176
- surface drainage 223
- surfaced dry 277
- surfaced green 277
- surface structure 238
- surface tension 177
- surfactant 43
- surround 27, 268
- surround theater 257
- survey 246
- surveyor's chain 247
- survey plat 246
- suspended ceiling 31
- suspended-span 17
- suspension bridge 29
- suspension structure 29
- swale 223
- swan's neck pediment 186
- sway brace 243
- sweating 176
- sweep 62
- sweep fitting 199
- swinging door 62
- swirl finish 47
- switch 79
- switchboard 75
- switchgear 75
- switchgear room 75
- symbol 52
- symmetry 55
- synagogue 250
- synclastic 220
- synectics 59
- synthesis 58
- synthetic rubber 193
- syrinx 249
- system 21
- systems building 50
- style 179
- Tt**
- tabernacle 36, 250
- tabernacle frame 186
- table 159, 183
- tablero 252
- tablet 183
- tactile texture 52
- taenia 180
- tag 177
- tail 213
- tail cut 213
- tail in 159
- tailing 159
- tailpiece 92, 211
- talud 252
- tambour 61
- tana 137
- Tang 254
- tangent 109, 110
- tangential shrinkage 277
- tangential stress 163
- Tao 129
- Taoism 129
- tap 83, 197
- tapered column 281
- tapered end form 204
- tapersplit shake 213
- tapping screw 83
- target 247
- task lighting 148
- taste 10
- tatami 137
- T-bar 172
- TB bulb 144
- T-beam 203
- T bulb 145
- teaser 257
- technics 11
- technique 66
- technology 11
- tectonics 11
- tee 172, 199, 253
- teepee 136
- tegula 214
- telamon 250
- tell 128
- temenos 250
- temper 169
- temperature 117
- temperature effect 165
- temperature reinforcement 204
- tempered glass 112
- tempered hardboard 284
- template 266
- template hinge 115
- temple 248
- Temple of Solomon 250
- templet 266
- tendon 206
- tenia 180
- tenon 141
- tensile force 162
- tensile strain 162
- tensile strength 162
- tensile stress 162
- tensile test 162
- tension 54, 162
- tension-control bolt 174
- tension member 238
- tension reinforcement 202
- tension ring 60
- tent structure 168
- tepee 136
- terminal 79
- terminal reheat system 126
- terminal unit 126
- terminal velocity 122
- termite shield 267
- terne metal 175
- terneplate 175
- terra cotta 34
- terrace 25, 139
- terrace house 139
- terrazzo 94
- terreplein 98
- territoriality 57
- tertiary beam 106
- tertiary color 39
- tertiary member 241
- tessera 182
- test 58
- test cylinder 44
- test pit 221
- tetrahedron 111
- tetrastyle 179
- texture 52, 53
- texture 1-11 282
- texture perspective 72
- thatch 107
- theater 256
- theater-in-the-round 257
- theodolite 247
- theory 59
- therm 117
- thermal barrier 118
- thermal break 118
- thermal comfort 120
- thermal conductance 118
- thermal conductivity 118
- thermal contraction 165
- thermal expansion 165
- thermal finish 237
- thermal insulation 119
- thermal resistance 118

- thermals shock 165
- thermal stress 165
- thermal transmittance 118
- thermocouple 121
- thermoforming 192
- thermometer 117
- thermoplastic 192
- thermoset 193
- thermosetting plastic 193
- thermostat 121
- thick-set process 33
- thimble 121
- thin-bed process 33
- thin-coat plaster 188
- T-hinge 115
- thinner 187
- thin-set terrazzo 94
- thin shell 219
- tholbate 61
- tholos 248
- thread 83
- three-coat plaster 188
- three-hinged arch 13
- three-hinged frame 104
- three-phase 76
- three-point perspective 73
- three-quarter-turn stair 234
- three-way lamp 144
- three-way switch 79
- threshold 63, 218
- threshold of hearing 229
- threshold of pain 229
- throat 65, 86, 87
- through check 278
- through stone 158
- through tenon 141
- through-wall flashing 177
- throw 122, 149
- thrust 13
- thrust stage 257
- thumbnut 84
- thumbscrew 83
- Tlahuanaco 130
- tie 156, 238
- tieback 221
- tie beam 103, 210
- tied column 203
- tier 258
- tierraceron 263
- tie rod 13
- tight fit 216
- tight knot 278
- tile accessory 33
- tile grout 33
- tile tie 214
- tilting fillet 214
- tilt-up construction 50
- timber 277
- timber connector 85
- timber pile 102
- timbers 279
- time-delay fuse 76
- time of haul 46
- tin 171
- tinplate 171
- tin roofing 214
- tint 39
- tinted glass 112
- to 255
- toe 86, 270
- toenail 82
- toggle bolt 84
- toggle switch 79
- toilet 198
- toilet partition 198
- tokobashira 137
- tokonoma 137
- Toltec architecture 131
- ton 167
- tone 39
- tongue-and-groove 140
- tongued miter 140
- tonne 167
- ton of refrigeration 124
- tooled joint 155
- tooled surface 237
- toothed plate 85
- top bar 203
- top car clearance 80
- topcoat 187
- top cut 211
- tope 253
- toplary 27
- toplap 212
- top out 49
- topping 94, 204, 206
- top plate 267
- top rail 64
- topsoil 224
- torana 253
- torchlere 147
- toril 255
- tormentor 257
- torque 163
- torsion 163
- torsional irregularity 244
- torus 181, 220
- totem 136
- totempole 136
- tou 254
- toughness 164
- tou-kung 254
- tourelle 99
- tower 26
- Tower of Babel 248
- town planning 10
- township 246
- trabeate 106
- trace 66
- tracery 275
- tracheld 276
- trachelium 180
- track lighting 147
- tract house 138
- traction elevator 80
- transept 36
- transfer column 105
- transfer girder 105
- transfer molding 192
- transformation 58
- transformer 75
- transformer vault 75
- transit 247
- transition 218
- transitional structure 239
- transit-mixed concrete 46
- translation 97
- translational surface 219
- translucent 143
- transmission loss 232
- transmittance 143
- transom 63
- transom light 63
- transom window 63
- transparent 143
- transverse arch 262
- transverse force 163
- transverse load 163
- transverse rib 263
- transverse section 70
- transverse shear 15
- trap 198
- trapezium 109
- trapezoid 109
- trave 107
- travel 80
- traveling cable 80
- traverse 246
- travertine 236
- tread 233
- tread return 235
- treated wood 280
- trefoil 275
- trefoil arch 14
- trellis 27
- tremie 221
- triad 39
- triangle 109
- triangle method 96
- triangular arch 14
- triangulation 247
- tribunal 251
- tribune 35, 251
- tributary 241
- tributary area 241
- tributary load 241
- tricalcium aluminate 42
- tricalcium silicate 42
- triforium 37
- triglyph 180
- trigonometric function 109
- trigonometry 109
- trilateration 247
- trillith 248
- trillithon 248
- trim 186
- trimetric projection 71
- trimmer 33, 92
- trimmer arch 87
- tripartite vault 263
- triphosphor 145
- triple point 117
- triplex 138
- tristyle 179
- triumphal arch 251

# INDEX

---

orking load 240  
orking stress 164  
orking stress design 240  
ork plane 149  
oven carpet 95  
oven valley 212  
oven-wire fabric 202  
eathe 184, 234  
eathe piece 234  
ought iron 170  
-shape 172  
ye 199  
ythe 155

x  
axis 108  
bracing 243  
coordinate 108  
a 128  
lem 276

y  
ung-shao 128  
rd 166  
rd lumber 279  
axis 107  
coordinate 107  
eld point 102, 164  
eld strength 164  
n 128  
ke 45, 272  
ung's modulus 162  
ngang 254  
rt 136

z  
potec architecture 130  
shiki 137  
xis 108  
zar 172  
coordinate 108  
e 172  
hith 150  
o-force member 259  
nglou 254  
ou 129  
gurati 248  
c 171  
ada 252  
al cavity method 149  
e 126  
ing ordinance 51  
horus 180  
nger 133

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 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 so on. 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 Eiler Rasmussen