

Abbreviations

The abbreviations listed below are commonly used in the construction industry.

r rain, range, rare, red, river, roentgen, run	rec room recreation room	RFP request for proposal
R radius, right, symbol for capacity of a pile	rect rectangle, rectified	RFQ request for quotation, request for qualifications
Ra radium	red reduce, reduction	rg, Rgh rough
RA remedial action, return air, registered architect	ref reference, refining	RG6 type of coaxial cable
rab rabbeted	REF refer, reference	Rh rhodium, Rockwell hardness
RAB rabbit	REFR refractory, refrigerate	RH relative humidity
rad radiator	refrig refrigeration	RHN Rockwell hardness number
raft rafter	reg registered	RI refractive index, remedial investigation
RAG return air grate	Reg regular	RIBA Royal Institute of British Architects
RAM rapid access memory, risk assessment methodology	REG register, regulator	rib gl ribbed glass
RAMCAP Risk Analysis and Management for Critical Assets Protection	rein, reinf reinforced	RI/FS Remedial Investigation/Feasibility Study
R&A (facility) repair and alteration	REINF reinforce, reinforcing	RIS Redwood Inspection Service
RAT return air temperature	REIT real estate investment trust	riv river
RBM reinforced brick masonry	REM removable	Rj road junction
RC, R/C reinforced concrete, red cedar	remod remodel	RKI rotary kiln incineration
RC asphalt rapid-curing asphalt	rent rental	R/L, RL random lengths
RCM reliability-centered maintenance	rep, REP repair	rm ream, room
RCP reinforced concrete pipe	repl, REPL replace, replacement	RM room
RCR room cavity ratio	REPRO reproduce	r mld raised mold
RCRA Resource Conservation and Recovery Act	reqd, REQD required	rms root mean square
RCx retro-commissioning (of existing buildings)	res resawn	ROD record of decision
1/4 RD quarter-round	ret retain, retainage	ROP record of production
1/2 RD half-round	RET return	ROPS roll-over protection system
rd road, rod, round	RETS real estate transaction standard	rot rotating, rotation
RD roof drain, round, remedial design	rev revenue, reverse, revised	rpm revolutions per minute
rdm random	REV revise	RPP remote power panel
rebar reinforcing bar	rf roof	RRGCP reinforced rubber gasket concrete pipe
recap recapitulation	RF roof, radio frequency, return fan	RRM rapidly renewable materials
recd received	RFA RCRA Facility Assessment	RRS railroad siding
recip reciprocal	RFC request for comment	R/S resawn
RECP receptacle	RFD reduced function device	RSF rentable square feet
	Rfg roofing	RSJ rolled steel joist
	RFI radio frequency interference, request for information	
	RFI/CMS RCRA Facility Investigation/Corrective Measures Study. <i>See also</i> RCRA.	

RSPA Research and Special Program
Administration

rt right

RT rain-tight, real temperature, real time

RTD resistance temperature detector

RTN return to normal

Rub, rub Ruberoid, rubble

rw redwood, roadway, right-of-way

RW, R/W random widths, right-of-way

R/W&L, RW/L random widths and
lengths

rwy, ry railway

R

Definitions

rab A rod or stick used to mix concrete or mortar.

rabbet **1.** A cut or groove along or near the edge of a piece of wood that allows another piece to fit into it to form a joint. **2.** A rabbet joint. *See also* dado.

rabbet bead A bead placed in the reentry corner of a rabbet.

rabbet depth The depth of a glazing rabbet.

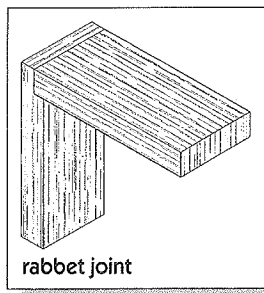
rabbeted doorjamb A doorjamb with a rabbet to receive a door.

rabbeted lock (rebated lock) A lock that is fitted into and flush with the rabbet on a rabbeted doorjamb.

rabbeted siding *See* drop siding.

rabbeted stop A stop that is an integral part of a door or window frame.

rabbet joint A longitudinal edge joint formed by fitting together rabbeted boards.

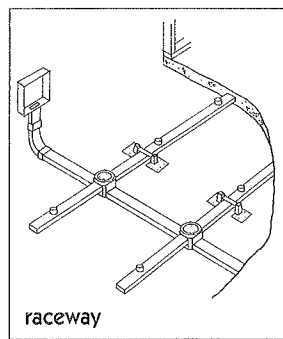


rabbet plane A plane for cutting a rabbet or fillister in wood, open on one side, with the blade extending to the open side.

rabbet size The actual size of a rabbeted glass opening, equal to the glass size plus two edged clearances.

race **1.** A channel intended to contain rapidly moving water. **2.** A groove in a machine part in which an object moves.

raceway **1.** Any furrow or channel constructed to loosely house electrical conductors. These conduits may be flexible or rigid, metallic or nonmetallic, and are designed to protect the cables they enclose. **2.** A man-made channel for directing water flow as in a hydroelectric plant.



rack A framework of metal bars used to prevent waterborne trash from entering a waterway.

rack-and-pinion elevator A platform or enclosure in which linear motion is created by the use of a rotating gear pinion mated to, and revolving on, a vertical stationary rack.

racked A temporary support used to brace and prevent deformation.

racking (racking back) **1.** A method entailing stepping back successive courses of masonry in an unfinished wall. **2.** The movement of structural elements out of level or plumb by forces such as stress, wind, or material shrinkage or expansion. **3.** The installation of roof shingles in a straight line across the roof instead of on the diagonal. This method is quick, but is not often used because it can produce shingles incorrectly nailed and color variations.

rack saw A saw with wide teeth.

radial Radiating from, or converging to, a common center.

radial arch roof A roof supported by arches that radiate out from a central point.

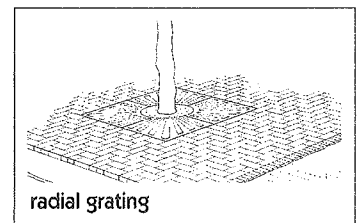
radial-arm saw (radial saw) A circular saw suspended above the saw table on a cantilevered arm. The material remains stationary while the saw is free to move along its projecting beam.

radial bar *See* radius rod.

radial brick *See* arch brick.

radial-curved fans Backward-curved centrifugal fans with flat blades.

radial grating Grating in which the bearing bars extend radially from a common center, and the cross bars form concentric circles.



radially cut grating Rectangular grating cut into panels shaped as segments of a circle to fit annular or circular openings.

radial sawn *See* quartersawn.

radial shrinkage The shrinkage of wood across its diameter or growth rings as it dries.

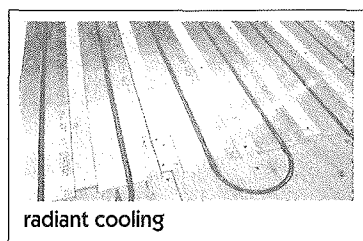
radial step *See* winder.

radian The standard metric unit for a plane angle, as compared to customary units of degree (°), minute ('), and second (").

radiance Light emitted or reflected from a designated area.

radiant barrier A reflective sheet or spray-on material applied to attic floors, rafters, or roof decking to reduce the flow of heat in and out of a building.

radiant cooling An efficient cooling system that typically involves running cool water through a building's floors, walls, or ceilings.



radiant energy Energy traveling in electromagnetic waves.

radiant glass Glass with embedded heating elements.

radiant heating system A system with heating terminals that deliver heat by radiation from a hot surface, such as those heated by the flow of hot water or electric current.

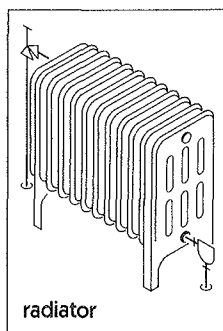
radiant panel test An ASTM method using radiant heat to test the surface flammability of different materials.

radiating brick See arch brick.

radiation The transmission of energy by means of electromagnetic waves of very long wave length. The energy travels in a straight line at the speed of light and is not affected by the temperature or currents of the air through which it passes.

radiation-shielding concrete A high density concrete used primarily for enclosing nuclear installations.

radiator A visually exposed heat exchanger consisting of a series of pipes that allows the circulation of steam or hot water. The heat from the steam or hot water is given up to the air surrounding the pipes.



radio frequency (RF) curing See high-frequency gluing.

radio frequency interference (RFI) Disturbance of radio frequency bands by other high frequency equipment nearby. Fluorescent lighting creates RFI.

radiological screening A soil test that can determine approximate areas of local contamination.

radionuclide A radioactive nuclide that can emit radiation.

radius gauge (fillet gauge) A gauge that measures the radius of curvature of small concave and convex surfaces.

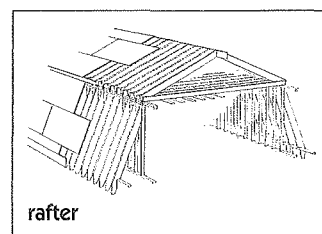
radius of curvature A measure of the dimensions of a curve, as in the radius of curvature of a directional wall.

radius of gyration An imaginary distance from an axis to a point such that, if an object's mass were concentrated at the point, the moment of inertia would not change.

radius rod A long arm with a marker at one end and an adjustable pointer at the other, used to draw large radius circles or curves.

radon An odorless, colorless radioactive gas given off by some soils and rock with a short half-life (less than four days). If found in homes in sufficient concentrations, radon exposure can cause health problems.

rafter One of a series of sloping parallel beams used to support a roof covering.



rafter plate A plate used to support the lower end of rafters and to which they are fastened.

rafter table A carpenter's square with a table of values for determining the lengths and angles of cut for roof rafters.

rafter tail That part of a rafter overhanging the wall.

raft foundation A continuous slab of concrete, usually reinforced. Employed as a foundation laid over soft ground, or where heavy loads must be supported. See also mat foundation.

rag bolt See lewis bolt.

rag felt An asphaltic felt consisting of rags saturated with asphalt, creating a waterproof composition for use on roofs, i.e., roofing paper and asphalt shingles.

ragging The simulation of crushed fabric on a flat wall or ceiling surface using paint or glaze and crumpled cloth.

raggle (reglet, raglin) A narrow channel or furrow in building stone for which metal flashing is fitted.

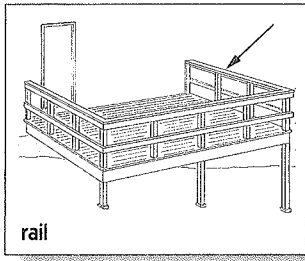
rag-rolled finish A decorative paint finish made by rolling a twisted rag over a wet paint surface so that portions of the undercoat show through. The effect can be simulated with a special paint roller.

ragstone Building stone quarried in thin blocks or slabs.

R

ragwork Courses of irregular stone masonry laid in a random pattern without parallel surfaces. The stones are roughly shaped with non-uniform joints. *See also* **random work**.

rail **1.** A horizontal member supported by vertical posts, e.g., a handrail along a stairway. **2.** A horizontal piece of wood, framed into vertical stiles, such as in a paneled door. **3.** Track used to direct or control the path of a vehicle or device.



rail bead A bead on a flat, continuous surface. *See* **cock bead**.

rail fence A barrier or boundary constructed of rails and their supporting posts.

rail head **1.** A loading point, or the nearest point of access to a railroad. **2.** The farthest point on a railroad to which rails have been laid.

railing **1.** A solid wood band around one or more edges of a plywood panel. **2.** A *balustrade*.

railroad tie A wood timber, usually 6" x 8" and 6'-8' in length, preserved with tar, used in construction of retaining walls.

rails **1.** The horizontal members that form the outside frame of a door, including pieces used as a cross bracing between the top and bottom rails. **2.** The horizontal members of a fence between posts. **3.** The side pieces of a ladder to which rungs or steps are attached.

rail steel reinforcement Reinforcing bars hot-rolled from standard T-section rails.

Raimann patch (football patch) A patch, elliptical in shape, used to fill voids caused by defects in the veneers of plywood panels. The Raimann patch is one of the two patch designs allowed in A-grade faces.

rain cap A protective cover installed at the top of a roof vent to prevent rain from entering. Sometimes screened to keep out birds as well.

rain catchment system Connected gutters, downspouts, and barrels or cisterns that capture and store rainwater for irrigation and indoor use.

rain leader *See* **downspout**.

rainscreen A method of constructing walls in which the cladding is separated from a membrane by an airspace that allows pressure equalization to prevent rain from being forced in. Often used for high-rise buildings or for buildings in windy locations.

rain sensor An electronic device that shuts off an automatic sprinkler system when it rains, conserving water when irrigation is not needed.

rainwater harvesting On-site rainwater collection and storage systems used to offset potable water needs for a building and/or landscape. Systems can take a variety of forms, but usually consist of a surface for collecting precipitation (roof or other impervious surface) and a storage system.

rainwet **1.** Lumber that has excess moisture content because of exposure to rain after it was dried. **2.** Surface lumber that has been stained or weathered by exposure to rain.

raised flooring system A floor constructed of removable panels supported by stringers allowing easy access to the space below.

raised girt (flush girt, raised girth) A stiffening member, parallel to and level with the floor joists, used to strengthen and protect.

raised grain A roughened condition on the surface of dressed lumber whereby the hard summerwood is raised above the softer springwood but not torn loose from it.

raised molding A molding not on the same level or plane as the wood member or assembly to which it is applied.

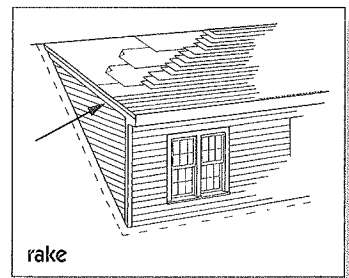
raised panel A panel that projects outward beyond the surrounding frame or wall.

raising hammer A hammer with a long head and a rounded face that is used in sheet metal work.

raising piece A piece of timber laid on top of a brick wall, or across posts of a timber-framed house, to support a beam or beams.

raising plate A horizontal timber carrying the feet of other structural members.

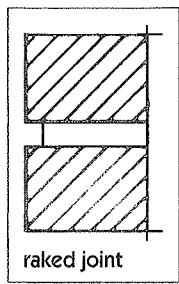
rake **1.** To slant or incline from the vertical or horizontal. **2.** A board or molding that is placed along the sloping edge of a frame *gable* to cover the edges of the siding. **3.** A tool used to remove mortar from the face of a wall.



rake angle Angle attached to purlins at rake in order to attach end walls.

rake classifier Machine for separating coarse and fine particles of granular material temporarily suspended in water. The coarse particles settle to the bottom of a vessel and are scraped up an incline by a set of blades. The fine particles remain in suspension to be carried over the edge of the classifier.

raked joint A joint in a masonry wall that has the mortar raked out to a specified depth while it is still soft.



rake-out (raking out) An action for removing mortar an even distance from the face of a wall.

raker 1. A sloping brace for a *shore head*.
2. A tool for raking out decayed mortar from the joints of brickwork.

rake siding Diagonal installation of lap siding.

rake trim Flashing used to close gap between the roof and the end walls.

raking bond A bricklaying pattern that is created by arranging face brick diagonally or vertically, i.e., herringbone, basket weave, or diagonal.

raking course A course of bricks laid diagonally across faces of a brick wall for added strength.

raking flashing A parallel flashing used at the intersection of a chimney or other projection, with a sloping roof.

raking pile See *batter pile*.

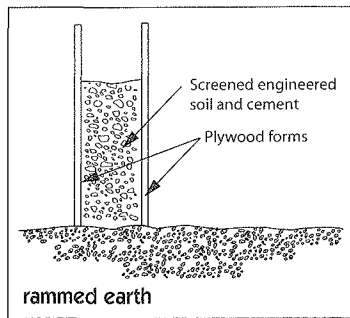
raking riser A riser that is not vertical, but slopes away from the nosing for added foot room on the lower riser.

raking stretcher bond A bond in brickwork in which the vertical joint of each brick is displaced a small, fixed distance from the vertical joint of the brick below.

ram 1. A cylinder that contains a plunger instead of a piston and rod. 2. The plunger in a hydraulic press.

rammed earth Earth formed into thick, durable monolithic building walls that

are energy-efficient and fire-resistant. Typically used in hot, dry climates, rammed earth walls are composed of screened engineered soil and cement, formed to be 18" or 24" thick. If used in cooler climates, rammed earth may require supplemental insulation or additional heating or cooling.



ramming A form of heavy tamping of concrete, grout, or the like by means of a blunt tool forcibly applied. See also *dry pack, punning, and tamping*.

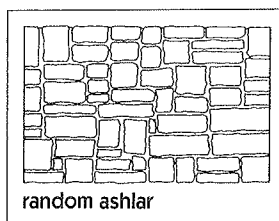
ramp A sloping surface to provide an easy connection between floors.

rampant vault A type of barrel vault exhibiting two quarters of different radii. The quarters have a common crown but the abutments are at different levels.

randle bar A rod horizontally assembled into the walls of an open chimney to which hooks are attached for hanging cooking pots and utensils.

random ashlar (random bond)

Constitutes ashlar masonry in which stones are set without continuous joints, and appear to follow a random pattern, although a large pattern may be repeated. See also *ashlar*.



random course An ashlar or squared stone masonry course of irregular height.

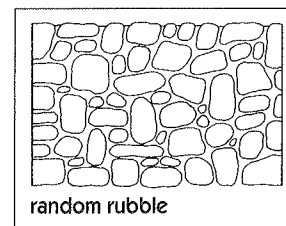
random lengths (RL) Lumber of various lengths. A random length loading is presumed to contain a fair representation of the lengths being produced by a specific manufacturer.

random line A surveyor's reference line laid between two points which are not visible from the other.

random paneling Board paneling of varying widths of the same grade and pattern. The term refers to plywood paneling grooved to represent random width paneling.

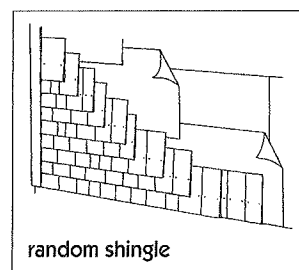
random range ashlar See *random work*.

random rubble Stonemasonry, built of rubble.



random shear A style of carpet that has only the higher loops sheared.

random shingle One of a number of shingles of the same length, but varying widths.



random widths Boards, lumber, and shingles of varying widths.

random work 1. A wall built of odd-sized stones. 2. Masonry of rectangular stone laid in broken courses by use of stones of different heights and widths.

range

R

range **1.** A row or course of masonry. **2.** A straight line of objects such as columns. **3.** The difference between prices, costs, estimates, and bids. **4.** The difference between the hot water temperature entering a cooling tower and the cold water leaving a cooling tower.

range closet A multi-seated latrine.

range-in (wiggling-in) The term used by a surveyor for the trial-and-error procedure of finding a previously established line.

range lines North-south lines used as reference points in the rectangular survey system, originally created to survey land in the U.S. public domain. See **rectangular survey system**.

ranger See **wale**.

range rod (range pole) A device that consists of a pole 7' to 8' long, equipped with a metal point. It is painted alternately red and white in bands one foot wide. The pole is used by surveyors for locating points of reference.

range work In masonry, squared-off blocks of building stone laid in horizontal courses.

-ranging bond Small strips of wood at the face of a masonry wall, usually laid in joints and projecting slightly; used to provide a nailing surface for furring and battens.

rapid-curing asphalt A liquid composed of asphalt, cement, and a highly volatile diluent such as naphtha or gasoline.

rapid-curing cutback See **rapid-curing asphalt**.

rapid-hardening cement A high-early-strength cement.

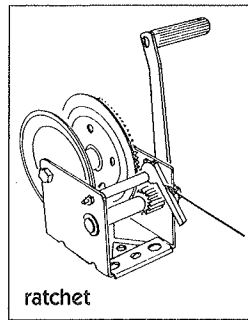
rapidly renewable materials (RRM)
Raw materials such as cork, bamboo and straw, that can be regrown quickly and are therefore considered sustainable.

rapid-start fluorescent lamp
A fluorescent lamp designed for operation with a ballast that provides

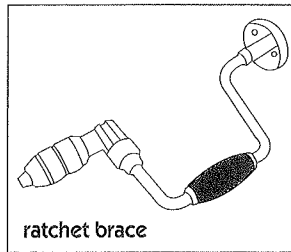
a low-voltage winding to preheat the electrodes and initiate the arc without a starting switch or the application of high voltage.

rasp A file with projecting teeth for rough work.

ratchet A mechanism with a hinged catch, or pawl, that slides over and locks behind sloped teeth on a gear or rod, allowing motion in one direction only.



ratchet brace A carpenter's clamp used in confined spaces where a full turn of the brace cannot be achieved. It is fitted with a pawl mechanism allowing the bit to be rotated while in the hole.



ratchet drill A hand-operated drill that works with a hinged catch engaging on a wheel or chuck.

rated lamp life The average life of a particular lamp fixture.

rated load The overall weight that a piece of machinery is designed to carry.

rated speed The speed at which a piece of machinery is designed to operate with an appropriate load.

ratio The relative size of two quantities expressed as one divided by the other.

rat patching Filling holes or voids with caulking, concrete, or other materials to prevent vermin from entering a structure.

rat stop A barrier in a masonry wall to prevent rats from burrowing down along the exterior of a masonry wall.

rat-tail file A file with a circular cross section that tapers to a small diameter at the end opposite the handle.

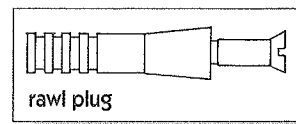
rattrap bond A bond in brickwork in which *headers* and *stretchers* are alternated and laid on edge on each face, creating a wall of two brick *wythes* (leaves) thick with a series of cavities between stretchers.

raummeter (stere) A German term for one cubic meter of stacked wood.

raveling A term used for the progressive deterioration of asphalt pavement. The aggregate dislodges and becomes fragmented.

raw linseed oil Linseed oil that has been refined, but has not received further processing such as boiling, blowing, or bodying.

rawl plug A short fiber cylinder with a lead lining, driven into a hole in wood, masonry, glass, plaster, tile, concrete, or other materials to receive and hold a screw.



raw material A material used for the construction or manufacture of goods or products.

raw mix Blend of raw materials, ground to desired fineness, correctly proportioned, and blended ready for burning, such as that used in the manufacture of cement clinker.

raw water **1.** Water that requires treatment before it can be used, such as water for steam generation. **2.** Any water used in ice making except distilled water. **3.** Water used strictly for cooling such as river water or sea water at a nuclear generating plant.

rays, wood The radial cells (rings) within a tree. They create a distinctive pattern in some quartersawn woods, such as oak.

raze To tear down, demolish, or level to ground.

RCRA Facility Assessment (RFA)

A site investigation, regulated under RCRA, that is used to determine the nature and extent of contamination at a particular location.

RCRA Facility Investigation/Corrective Measures Study A combined project that includes both the RFI and CMS as a single integrated activity. See **Resource Conservation and Recovery Act**.

RDX (Cyclotrimethylenetrinitramine)

An explosive commonly encountered in unexploded ordnance sites.

reactance Opposition to alternating current (AC) by capacitance or inductance or both. It is expressed in ohms, and symbolized by X.

reaction Resistive forces acting on a structural member that serve to hold it stable.

reactivated carbon Carbon that has been used for volatile organic compound adsorption, which is then treated for reuse.

reactive aggregate Aggregate containing substances capable of reacting chemically with the products of solution or hydration of the Portland cement in concrete or mortar, under ordinary conditions of exposure, resulting in harmful expansion, cracking, or staining.

reactive silica material Several types of materials that react at high temperatures with Portland cement or lime during autoclaving, including pulverized silica, natural pozzolan, and fly ash.

reactivity The propensity of one substance to chemically react with another.

readily accessible Allowing for access without the need to remove obstructions.

ready-mixed concrete

Concrete manufactured for delivery to a purchaser in a plastic and unhardened state. See also **concrete**, **ready-mixed**, **central-mixed concrete**, **shrink-mixed concrete**, and **transit-mixed concrete**.

ready-mixed plaster A calcined gypsum plaster with aggregate added during manufacture. A powder product that requires the addition of water.

reagent A substance used in analysis and synthesis of chemical reactions.

real estate Property in the form of land and all improvements such as buildings and paving.

real estate investment trust (REIT)

A trust that invests in real estate, requiring by law that 95% of the profits be distributed to the investors.

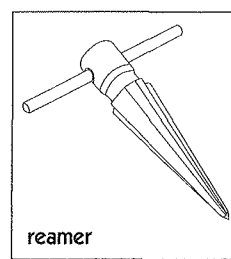
realignment A change in the horizontal layout of a highway, may also affect vertical alignment.

real property (real estate) Land and anything growing on the land, or constructed on it, such as buildings, stone walls, fences, driveways, garages, underground swimming pools, trees, shrubs, and gardens. Real property also includes *fixtures*, or items that are permanently affixed to real property, such as light fixtures, oil burners, fuse boxes, and plumbing.

real-time operating system An operating system designed to manage time-critical functions.

ream To enlarge or smooth a hole using a reamer.

reamer A bit with sharp, spiral, fluted, cutting edges along the shaft that may be slightly tapered. Used to enlarge drilled holes or remove burrs from the inside of pipe.



rear arch An arch forming a true opening and faced by a larger arch for decoration.

reasonable care and skill See **due care**.

reasonable cost A cost that would be incurred by an ordinarily prudent person in the conduct of competitive business.

rebar Short for reinforcing bar.

rebate Discount, deduction, or refund of money.

rebound Aggregate and cement or wet shotcrete that bounces away from a surface against which it is being projected.

rebound hammer An apparatus providing a rapid indication of the strength of concrete based on the distance of rebound of a spring-driven missile.

rebutted and rejoined (R&R)

Shingles with edges machine-trimmed to be exactly parallel and butts retrimmed at precisely right angles for use primarily in sidewall applications.

recapture clause A contract clause permitting the party who grants an interest or right to take it back under certain conditions.

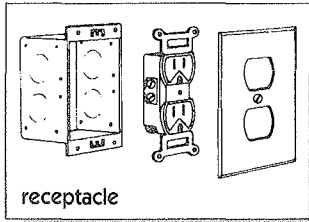
receipt of bids

R

receipt of bids The official action of an owner in receiving sealed bids that have been invited or advertised in accordance with the owner's intention to award a contract for construction.

receiver A tank to hold fluids or gases, as on an air compressor.

receptacle A contact device installed in an electric outlet box for the connection of portable equipment or appliances.

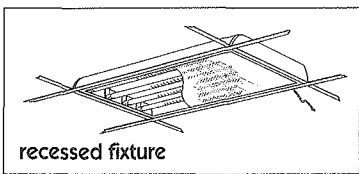


receptacle outlet An electric outlet with one or more receptacles.

receptacle plug A device, usually attached to a flexible chord, that is inserted in a receptacle to connect portable equipment or appliances to an electric circuit.

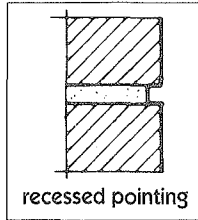
receptor The shallow basin in the floor of a shower.

recessed fixture A lamp fixture the bottom edge of which is flush with the finish surface.



recessed head A specially constructed mechanical fastener that is designed to fit flush into the surface.

recessed pointing A type of joint where the mortar is kept back approximately 1/4" from the face of the wall. This particular joint protects the mortar from peeling.



recharging 1. The replenishment of ground water through direct injection or infiltration from trenches outside the area. 2. The replenishment of electric energy in a storage battery.

reciprocal leveling A surveying technique used in leveling across streams, gullies, and other obstructions. To eliminate instrumental errors, levels are taken from two setups, one near each point.

reciprocating chiller (reciprocating compressor) Single-acting compressor using pistons that are driven by a connecting rod from a crankshaft.

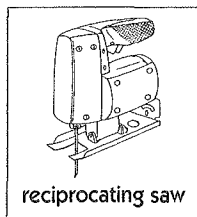
reciprocating compressor An air compressor using a piston to compress the air, and employing valves for intake and discharge. *See also* rotary compressor.

reciprocating drill *See* push drill.

reciprocating engine A steam or internal-combustion engine with cylinders and pistons as opposed to a turbine.

reciprocating pump A water pump using a piston(s) for intake and discharge. Depending upon valve arrangement, the pump can be either single- or double-acting.

reciprocating saw A saw operated in a back and forth or up and down motion extending from an engine or other power source, e.g., a saber saw.



recirculated air Return air that is reconditioned and distributed once again, as opposed to makeup air.

reclaimed lumber Wood building materials removed from a deconstructed building in such a way that they can be reused for non-structural purposes.

recloser A device that protects a power system from service interruption by automatically opening and closing as overcurrents (short circuits) are detected. It detects the fault, and closes and resets to open the line, often more than once. It clears the fault and re-energizes the distribution line.

reconditioned wood Hardwood lumber steam-dried to correct defects that occurred during the original curing, such as collapse or warp.

reconstruction The process of depicting (by means of new construction) the form, features, and detailing of a non-surviving site, landscape, structure, or object for the purpose of replicating its appearance at a specific period of time, and in its historic location.

record drawings Construction drawings updated to show the progress of the work, usually based on data furnished by the contractor to the designer.

recording fee A payment to a local jurisdiction to cover the cost of recording the transfer of a piece of property.

record of decision (ROD) An agreement between the site owner(s) and other responsible parties and the regulators that stipulates the remedial action requirements, schedule, and cost sharing for cleanup.

record sheet A sheet or form that preserves the memory of events.

recovery peg A temporary surveying marker of known location and elevation, used to reestablish a permanent marker that is to be replaced.

rectangular survey system A land survey system using longitude and latitude geographical coordinates. Established by the U.S. government, it is also called government survey system.

rectangular tie A piece of bent heavy wire in the shape of a rectangle used as a wall tie.

rectifier An electrical device that converts alternating current (AC) to direct current (DC).

recycle Revisiting partially or fully completed activities to perform additional work due to a change.*

recycled concrete Hardened concrete that is crushed to be used as aggregate.

recycled content Products such as steel, plastic lumber, and carpet cushion, fabricated with post-consumer materials or post-industrial by-products.

recycling Reusing, reprocessing, or refabricating products after their initial use. Examples of recycled products include some types of tile, glass, asphalt paving, masonry, metal framing, insulation, toilet compartments, and carpet.

red alder *Alnus rubra*. See alder.

red cedar See western red cedar, incense cedar, and eastern red cedar.

redesign Creating a plan to change an existing building to a new appearance or configuration.

red fir An archaic description of Douglas fir lumber made from smaller, younger timber principally from the coast range and southern Oregon. See also California red fir.

red herring A proposed contract term that is not critical, but is offered for the purpose of distracting the other party.

red knot A slang term for a knot caused by cutting through a live pine branch.

red label A grade of shingle between blue label #1 and black label #5, graded by the Red Cedar Shingle and Handsplit Shake Bureau.

red lead A compound of lead used in paints to improve the anticorrosive properties of the paint used on steel and iron.

redline To make changes to building plans by marking with a pen or pencil.

red meranti *Shorea* species. Any of a number of tropical hardwoods, mainly used as veneers, such as lauan.

red oak *Quercus rubra* and others, such as southern red oak.

red oxide A pigment used in paints to prevent rusting and corrosion.

red pine (Norway pine) *Pinus resinosa*. This species is found in the Great Lakes states, the northeastern U.S., and eastern Canada. The wood is used for general construction and for remanufacturing into such items as sash, molding, flooring, and crating.

redress 1. Financial compensation for a loss caused by the actions of another. 2. To set right, remedy, or rectify.

red rot An early stage of decay.

redry To turn material to a dry kiln or veneer dryer for additional drying when the material is found to have a higher moisture content level than desired.

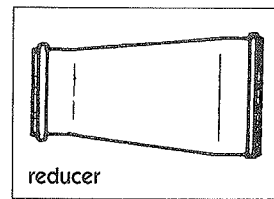
red silver fir (Pacific silver fir) *Abies amabilis*.

red spruce (eastern spruce) *Picea rubens*. This species is found in southeastern Canada, the New England states, and along the Appalachian Mountains as far south as North Carolina. In addition to general construction applications, the wood is often used for such products as ladder rails and as a source of pulpwood.

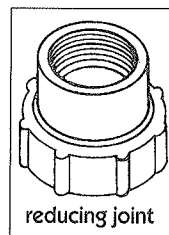
red stripe Fungi that have entered cracks in wood and caused decay.

reduced function device (RFD) In building automation systems, a device that serves just one function, such as temperature monitoring. In contrast, a full-function device might control variable air volume.

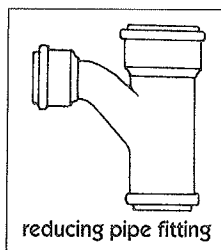
reducer 1. A solvent used in paints to reduce the viscosity of the paint. 2. A pipe fitting, larger at one end than at the other. A reducing coupling. 3. A substance that chemically reacts with another by removing an oxygen atom from the chemical structure of the second substance. 4. A pipe coupling with a larger size at one end than the other. The larger size is designated first. Reducers are threaded, flanged, welded, etc. Reducing couplings are available in either eccentric or concentric configurations.



reducing joint The connecting joint of unequally sized electrical conductors.



reducing pipe fitting Fitting that is constructed to facilitate the joining of unequally sized pipes.



reduct A small piece of material cut from a larger piece to make the larger piece uniform or symmetrical.

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reduction of area

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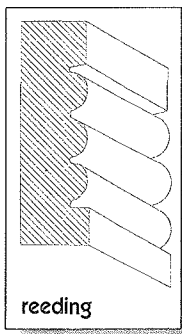
reduction of area The difference between the original cross-sectional area of a tensile specimen and the smallest area after rupture, expressed as a percentage of the original area.

redundant power An extra power source. It may be a complete second power system or a just an additional generator. Duplicate power service allows users to switch large amounts of a building's power load to another system.

redwood *Sequoia sempervirens*. This species is found only in limited areas of northern California and southern Oregon. It is resistant to decay and is used for many of the same purposes as cedar, especially siding and paneling. Another species of redwood, *Sequoia gigantea*, grows in the Sierra mountains of central California. It is protected from harvest.

Redwood Inspection Service One of seven regional grading agencies in North America that is authorized to write and publish grading rules for lumber. *See also* grade stamp.

reeding A decorative molding with several parallel half-round moldings.



reed switch Two or more highly conductive reeds inside a glass container. The reeds open or close together in response to a magnetic field.

reentrant angle An internal angle of usually less than 90°.

reeving 1. Threading a rope through the blocks to assemble a block and tackle.

2. Threading or placing a pulling or control line.

reference line A series of two or more points in line to serve as a reference for measurements.

reference mark A supplementary mark close to a survey station. One or more such marks are located and recorded with sufficient accuracy so that the original station can be reestablished from the references.

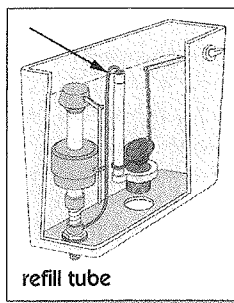
reference standards

Professionally prepared generic specifications and technical data compiled and published by competent organizations generally recognized and accepted by the construction industry. These standards are sometimes used as criteria by which the acceptability and/or performance of a product, material, assembly, or piece of equipment can be judged.

reference standard specification A type of nonproprietary specification that relies on accepted reference standards to describe a product, material, assembly, or piece of equipment to be incorporated into a project.

referendum A special election subdivision of municipal law that establishes public approval (e.g., for elected officials to sell general obligation bonds as a means of financing a public project).

refill tube A tube in toilets that sends water from the ballcock into an overflow tube to refill the bowl after a siphon break.



reflectance The ratio of light reflected from a surface to the light incident on the surface. Reflectances are often used for lighting calculations. The reflectance of a dark carpet is around 20%, and a clean white wall is roughly 50% to 60%.

reflected glass Glass with a special metallic coating used to repel light and radiant heat.

reflected plan A plan of an upper surface, such as a ceiling projected downward.

reflected sound Sound that has struck a surface and "bounced off."

reflection The return from a material's surfaces of light or sound waves.

reflection cracking The occurrence of cracks in overlays and toppings that coincide with the location of cracks in the base slab.

reflective insulation A thermal material having one or both faces metallically coated to reflect the radiant energy that strikes its surface.

reflective roof Roofing treated with a special coating that reflects the sun's heat away from the building, reducing the building's heat gain and prolonging the life of the roof.

reflector A device used to redirect light or sound energy by the process of reflection.

reflector lamp An incandescent lamp in which a part of the bulb acts as a reflector.

reflux valve *See* check valve.

refraction The change in path of a light ray or energy wave as it passes obliquely from one medium to another.

refractories Materials, usually nonmetallic, used to withstand high temperatures.

refractoriness In refractories, the property of being resistant to softening or deformation at high temperatures.

refractory Resistant to high temperatures.

refractory aggregate Materials having refractory properties that form a refractory body when bound together into a conglomerate mass by a matrix.

refractory brick A brick manufactured for high temperature use.

refractory cement A high temperature bonding material used in furnaces, consisting of crushed brick and diatomaceous earth.

refractory concrete Concrete having refractory properties and suitable for use at high temperatures, generally about 315°C to 1315°C, in which the binding agent is a hydraulic cement.

refractory insulating concrete Refractory concrete having low thermal conductivity.

refrigerant The medium used to absorb heat in a cooling cycle.

refrigerant charge The quantity of refrigerant in a refrigeration system.

refrigerant compressor unit A unit consisting of a pump with various controls for regulating refrigerant flow.

refrigeration cycle A thermodynamic process whereby a refrigerant accepts and rejects heat in a repetitive sequence.

refrigeration system A system in which a refrigerant is compressed, condensed, and expanded as a means of removing heat from a cold reservoir. The heat is rejected elsewhere at a higher temperature.

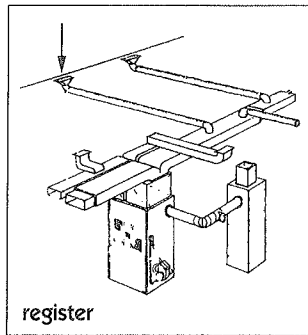
refrigerator A container or space and the machinery for cooling it.

refusal The depth at which a pile cannot be driven any deeper.

regenerative elevators Elevators that capture mechanical energy from braking and convert that energy into electrical power.

regenerative heating The use of heat rejected from one part of the heating cycle and transferred to another part.

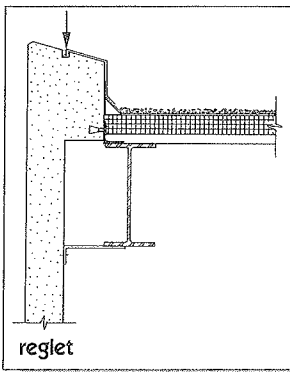
register An opening to a room or space for the passage of conditioned air. The register has a grille and a damper for flow regulation.



registered architect See architect.

re-glaze To replace the glass in a window.

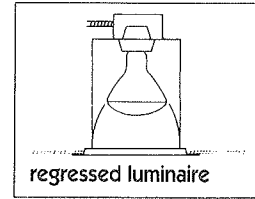
reglet A groove in a wall to receive flashing.



reglette Surveyor's measuring device graduated down to hundredths of a foot.

regrating The cleaning of masonry by removing the outer layer, leaving a fresh stone surface.

regressed luminaire A luminaire mounted above a ceiling with its opening above the ceiling line.



regulated-set cement A Portland cement with admixtures for the purpose of controlling its set and early strength.

regulated unit The term for any surface impoundment, waste pile, land treatment unit, or landfill that received waste after July 26, 1982.

regulation The ability of a ballast to hold constant (or nearly constant) the output watts (light output) during fluctuations in the voltage feeding of the ballast. Normally specified as +/- percent change in output compared to +/- percent change in input.

regulator 1. A device that maintains an appropriate rate of release of pressurized substances. 2. An electronically controlled device that regulates system voltage.

regulatory Related to provisions specified in a regulation implementing a law.

regulus metal See antimonial lead.

rehabilitation (rehab) The process of making possible a compatible use for a property through repair, alternations and additions, while preserving those portions or features that convey what have been determined to be important cultural or architectural values.

reheat coil A coil in an air supply duct, used to control the temperature of air being supplied to individual spaces or a group of spaces.

reheating The heating of return air in an air-conditioning system for reuse.

reimbursement expenses

Amounts expended for, or on account of, a project that are to be reimbursed by the owner in accordance with the terms of the appropriate agreement.

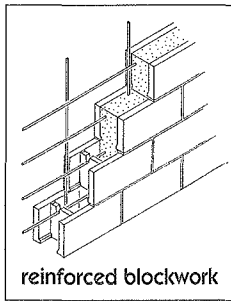
reinforced bitumen felt

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reinforced bitumen felt A light roofing felt saturated with bitumen and reinforced with jute cloth.

reinforced blockwork

Masonry blockwork with reinforcing steel and grout placed in the voids to resist tensile, compressive, or shear stresses.



reinforced brick masonry Brick masonry in which steel reinforcement is placed.

reinforced cames Lead bars with a steel core for reinforcing, used in leaded lights.

reinforced concrete Concrete containing adequate reinforcement, prestressed or not prestressed, and designed on the assumption that the two materials (steel and concrete) act together in resisting forces. *See also* plain concrete.

reinforced concrete masonry

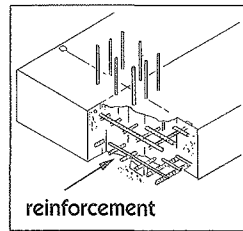
Concrete masonry construction in which steel reinforcement is so embedded that the materials act together in resisting tensile, compressive, and/or shear stresses.

reinforced masonry Unit masonry construction in which steel reinforcement is so embedded that the materials act together in resisting tensile, compressive, and/or shear stresses. *See also* masonry unit.

reinforced plastic Plastic that has components added to it, such as glass fiber, to increase its strength and stiffness.

reinforced T-beam A concrete T-beam strengthened internally with steel rods to resist tensile and/or shear stresses.

reinforcement Bars, wires, strands, and other slender members embedded in concrete in such a manner that the reinforcement and the concrete act together in resisting forces.



reinforcement, cold-drawn wire

Steel wire made from rods that have been hot-rolled from billets and cold-drawn through a die used for concrete reinforcement of small diameter such as in gauges not less than 2 mm nor greater than 16 mm.

reinforcement, cold-worked steel

Steel bars or wires that have been rolled, twisted, or drawn at normal ambient temperatures.

reinforcement, distribution bar

Small-diameter bars, usually at right angles to the main reinforcement, intended to spread a concentrated load on a slab and to prevent cracking.

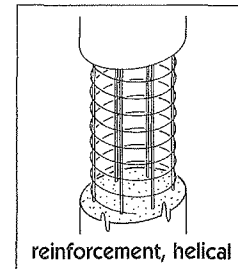
reinforcement, dowel bar *See* dowel.

reinforcement, expanded metal fabric
See expanded metal.

reinforcement, four-way A system of reinforcement in flat slab construction comprising bands of bars parallel to two adjacent edges and also to both diagonals of a rectangular slab.

reinforcement, helical

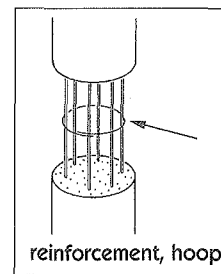
Steel reinforcement of hot-rolled bar or cold-drawn wire fabricated into a helix, more commonly known as spiral reinforcement. Used in round columns.



reinforcement, high-strength

Concrete reinforcing bars having a minimum yield of 60,000 psi or 414 MPa.

reinforcement, hoop A one-piece closed tie or continuously wound tie not less than #3 in size, the ends of which have a standard 135° bend with a 10-bar-diameter extension, that encloses the longitudinal reinforcement in a column.



reinforcement, lateral Usually applied to ties, hoops, and spirals in columns or column-like members.

reinforcement, mesh *See* welded-wire fabric *and* welded-wire fabric reinforcement.

reinforcement, principal Elements or configurations of reinforcement that provide the main resistance of reinforced concrete to tensile loads borne by structural components. *See also* reinforcement, secondary.

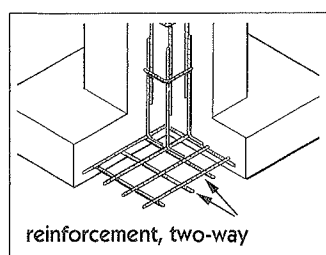
reinforcement, secondary Reinforcement other than main reinforcement.

reinforcement, spiral *See* spiral reinforcement.

reinforcement, transverse Reinforcement at right angles to the longitudinal reinforcement. Transverse may be main or secondary reinforcement.

reinforcement, twin-twisted bar Two bars of the same nominal diameter twisted together.

reinforcement, two-way
Reinforcement arranged in bands of bars at right angles to each other.

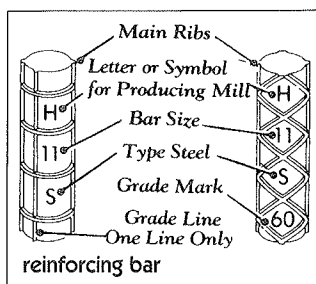


reinforcement, welded Reinforcement joined together by welding.

reinforcement displacement
Movement of reinforcing steel from its specified position in the forms.

reinforcement ratio Ratio of the effective area of the reinforcement to the effective area of the concrete at any section of a structural member. *See also* percentage of reinforcement.

reinforcing bar A steel bar, usually with manufactured deformations, used in concrete and masonry construction to provide additional strength.



reinforcing plate An added plate used to strengthen a member or part of a member.

reinforcing rod *See* reinforcing bar.

reinforcing steel *See* reinforcing bar.

reinforcing tape A tape that is used to hide and strengthen joints between drywall sheets.

reinforcing unit A box-shaped reinforcement in a hollow metal door that houses a bored lock and that provides supports for the latch.

rejection of work The act of rejecting work that is defective, or that which does not conform to contractually agreed upon requirements.

relamping The replacement of lamps (bulbs) in light fixtures. May be done as each fails, or may be done on a schedule.

relaskop A patented instrument used by foresters to measure tree heights and/or slope gradients by trigonometric means.

related trades The different building trades required to complete a project.

relative compaction The dry density of soil expressed as a percentage of the density of the soil after a standard compaction test.

relative humidity The ratio of the quantity of water vapor actually present to the amount present in a saturated atmosphere at a given temperature, expressed as a percentage.

relative settlement *See* differential settlement.

relaxation of steel Decrease in stress in steel as a result of creep within the steel under prolonged strain, or as a result of decreased strain of the steel, such as results from shrinkage and creep of the concrete in a prestressed concrete unit.

relay An electromagnetic or electromechanical device using small currents and voltages to activate switches or other secondary devices.

release agent Material used to prevent bonding of concrete to a surface, such as to forms. *See also* bond breaker.

release of lien The act of releasing a person's or entity's mechanics lien against a property. *See also* mechanic's

lien and waiver of lien.

release paper A protective film, coated lightly on one side with adhesive, used to protect a surface during shipment and installation.

relief 1. Carved or embossed decoration raised above a background plane.

2. The representation of elevations of the earth's surface, usually referenced to a mean-sea-level datum plane, by means of contour lines.

relief angle Structural angle introduced to help support masonry over an opening or at specified elevations or multistory construction.

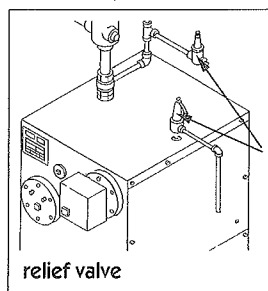
relief cut An initial cut made to keep the saw from binding when a curved section is about to be cut.

relief damper A damper in an air-conditioning system that opens automatically at a set pressure differential to balance pressures in a building.

relief holes Several holes drilled into rock in a line to aid in the fracture of the rock along that line.

relief map A map showing relief by means of contour lines, shading, tinting, or relief models.

relief valve A pressure-activated valve held closed by spring tension and designed to automatically relieve pressure in excess of its setting.



relief vent An auxiliary vent that is supplementary to regular vent pipes. The primary purpose is to provide supplementary circulation of air between drainage and vent pipes.

relish

R

relish In carpentry, the shoulder around or at the side of a tenon.

reluctance The opposition a material offers to magnetic force.

rem (Rad equivalent man) These are units used to measure radiation as it affects humans.

remedial action A permanent remedy taken instead of, or in addition to, a removal action that is in response to a release or threatened release of hazardous substances.

remedial design The phase of the site remediation process in which remedial technologies and processes are designed prior to installation.

Remedial Investigation/Feasibility Study (RI/FS) The phase of the site remediation process in which the nature of contaminants is determined and a remedial remedy is selected. It is a site investigation and cleanup selection process that includes activities such as project scoping, data collection, risk assessment, treatability studies, analysis of alternatives, and remedy selection.

remediation The process of correcting a problem such as mold infestation.

remedies The manner in which a breach of contract is settled by a court or arbitrators.

remodeling Making alterations to an existing structure such that it will be better suited to current needs. This type of work may involve changing the use of interior space by repositioning walls, replacing bathroom or kitchen fixtures, or other such modifications. Remodeling projects generally incorporate new replacement materials, and are not concerned with maintaining historic authenticity.

remoldability The readiness with which freshly mixed concrete responds to a remolding effort such as jiggling or vibration, causing it to reshape its mass around reinforcement and to conform to the shape of the form. *See also* flow.

remolding test A test to measure remoldability.

remote Gas, electric, or water meter in an accessible place for reading by utility employees, usually the back or front of a home.

remote-control circuit An electrical circuit that controls another circuit by means of a relay device.

removable mullion A door mullion that can be removed from a door frame to allow passage of oversized objects.

removable stop A removable molding or trim used to stop motion and permit the installation of windowpanes or doors.

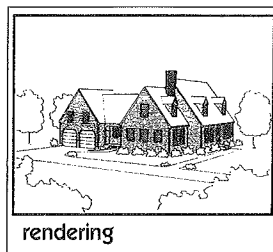
removal action A short-term action in response to a release of hazardous substances that might present an imminent and substantial danger to human health or to the environment.

repeat The distance between repetitions of identical patterns on wallpaper.

render **1.** To shade an architectural or machine drawing to give it a more real-life appearance. **2.** To apply plaster, especially the first coat, directly to brickwork or other masonry.

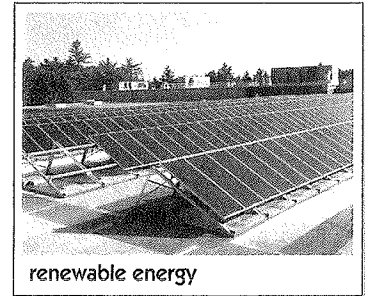
rendered brickwork Brickwork that has a waterproof material applied to the face.

rendering **1.** The application, by means of a trowel or float, of a coat of mortar. **2.** A drawing of a project or a portion of a project that delineates materials, shades, and shadows.



rendering

renewable energy Energy from natural resources that replenish themselves, such as the sun, wind, rain, tides and geothermal sources.



renewable energy

renewable energy certificates (RECs) Also referred to as "green tags," RECs each represent one megawatt hour of renewable energy. RECs may be sold by those who produced the energy to offset the cost of generating it.

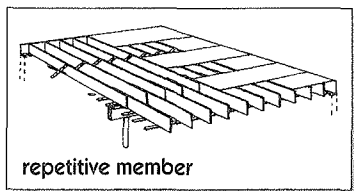
renovation Modernizing the elements within a structure to meet current functional and aesthetic requirements. Renovation work may also be considered remodeling or adaptive reuse.

repeatability Variability among replicate test results obtained on the same material within a single laboratory by one operator. Repeatability is a quantity that will be exceeded in only about 5% of the repetitions by the difference, taken in absolute value, of two randomly selected test results obtained in the same laboratory on a given material. In use of the term, all variable factors should be specified.

repeater A device that can receive a weak one-way or two-way communications signal, amplify or reshape it, and retransmit it. In digital transmission, a weak pulse train of discrete signals is received, amplified, retimed, and reconstructed for delivery back to the source. In fiber optics, a low-power light signal is converted electronically and retransmitted via a light-emitting diode or laser light source.

repeating theodolite A theodolite designed so that an angle can be turned several times; and successive angle measurement accumulated, with the final reading representative of the accumulations.

repetitive member One of a series of framing or supporting members such as joists, studs, planks, or decking that are continuous, or spaced not more than 24 inches apart; and are joined by floor, roof, or other load-distributing elements. In repetitive-member framing, each member is connected to, and receives some shared support from, the others.



replacement cost coverage Type of insurance that guarantees that the insurance company will pay to replace the damaged property with new property (depreciation will not be deducted).

replacement value The estimated cost to replace an existing building based on current construction costs.

repointing See pointing.

reporting form See property insurance.

reposting See reshoring.

reproducibility Variability among replicate test results obtained on the same material in different laboratories. Variability is a quantity that will be exceeding in only about 5% of the repetitions by the difference, taken in absolute value, of two single test results made on the same material in two different, randomly selected laboratories. In use of the term, all variable factors should be specified. See also repeatability.

reproductive toxin A substance that chemically or biologically interferes with the reproductive process; a teratogen.

request for information (RFI) A formal request for preliminary information for the purpose of evaluating potential bids for design services, construction services, or both. This request does not usually signify a firm commitment by an owner, but it provides information on potential bidders and their capabilities. The information gathered by RFIs is sometimes used to develop a list of architects, engineers, or contractors who will eventually receive a Request for Proposal (RFP).

request for job order (JO) proposal The owner's notification to the contractor of an upcoming project (JO). This document identifies and briefly describes the project, the desired or required dates and times for performing the work, and contact information of the owner's designated project representative. The request may include other project-specific information. Response times to the request are in accordance with contract requirements.

request for payment See application for payment.

request for proposals (RFP) Material provided to potential contractors to communicate government requirements and solicit proposals.

requisition To apply for progress payments based on work completed at the end of the pay period (usually one month). Abbreviated term for application for payment.

re-rod Steel rods used to reinforce concrete or block.

reroofing Replacing or covering an existing roof.

resaw 1. To saw a piece of lumber along its horizontal axis. 2. A band saw that performs such an operation.

resawn board A piece of lumber, most commonly 11/16" thick, obtained by

resawing a piece of 6/4 common. Used mostly for sheathing and industrial applications. Produced most often from ponderosa pine and white fir.

resawn lumber Lumber that has been sawn on a horizontal axis to produce two thinner pieces. See also resawn board.

resealing trap A trap connected to a plumbing fixture drainpipe so constructed as to allow the rate of flow to seal the trap without causing self-siphonage.

reservoir A tank or receptacle used for the accumulation and retention of a fluid.

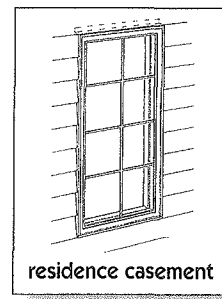
reset controls Controls for hot water systems that inversely monitor the hot water loop set point as compared to the outdoor temperature. For example, the system may be set for 180°F when the outdoor temperature is 0°F, and, inversely, the loop temperature could be 120°F when the outdoor air temperature is 45°F.

reset program See load reset program.

resetting (of forms) Setting of forms separately for each successive lift of a wall to avoid offsets at construction joints.

reshoring The construction operation whereby the original shoring or posting is removed and replaced in such a manner as to avoid deflection of the shored element or damage to partially cured concrete.

residence casement A window sash that opens outwards. Used in homes, hotels, and commercial buildings.



R

resident engineer An engineer retained by the owner as a representative on the construction site. Frequently used on governmental projects. *See also* owner's inspector and clerk of the works.

residential occupancy Occupancy of a building in which sleeping accommodations are provided for normal residential purposes. The term excludes institutional occupancy.

resident inspector *See* owner's inspector, resident engineer, and project representative.

residual approach A methodology for determining the cost of an asset within a construction project.

residual deflection The amount of deviation that remains after an applied load has been removed.

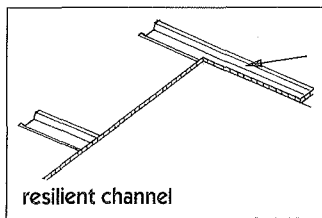
residual soil Soil formed by the aging of the subsurface mineral material.

residual stress The stress remaining in a member after an applied force has been removed.

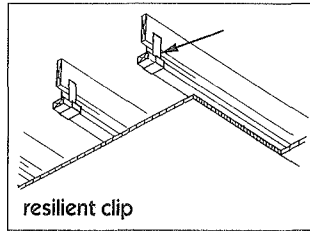
residual tack *See* aftertack.

resilience The work done per unit volume of a material in producing strain.

resilient channel A mounting device with flexible connectors used for fastening gypsum board to studs or joists. Helps reduce the transmission of vibrations.



resilient clip A flexible metal device for mounting gypsum board to studs or joists; used to reduce noise and vibrations.



resilient flooring A manufactured interior floor covering material, in either sheet or tile form, that is resilient.

resin **1.** A natural or synthetic solid, or semisolid organic material of indefinite and often high molecular weight having a tendency to flow under stress. It usually has a softening or melting range and fractures conchoidally. **2.** A natural vegetable substance occurring in various plants and trees, especially the coniferous species, used in varnishes, inks, medicines, plastic products, and adhesives.

resin chipboard A particle board that uses a resin to ensure a uniform consistency.

resin-emulsion paint Paint with a vehicle consisting of an oil, oleo-resinous varnish, or resin binder dispersed in water.

resin mortar (or concrete) *See* polymer concrete.

resin treated wood *See* compregnated wood and compressed wood.

resistance *See* electrical resistance.

resistance brazing A process in which coalescence is produced by the heat obtained from the resistance of the work to the flow of an electrical current.

resistance welding A process creating a metallurgical bond between metal by producing heat obtained from the resistance offered by the work to the flow of electric current, and by the application of an external pressure.

resistor A device included in an electric circuit to introduce a desired resistance.

resolve Use of a microscope to distinguish between different objects.

resonance A condition reached in an electrical or mechanical system when the applied load frequency coincides and is equal to the natural undamped frequency of the system.

resonator **1.** A device that intensifies vibration and volume, usually of sound waves. **2.** A hollow metal container that is utilized to create microwaves.

resorcinol adhesive A bonding material that is workable and water soluble for two to four hours. After this, it becomes insoluble and chemically resistant.

resorcinol resin adhesive A synthetic resin adhesive made with resorcinol-formaldehyde resin using a hardener, usually composed of wood flour and paraform. The adhesive provides an exterior quality glue line and will cure at room temperature. It is used in the manufacture of laminated beams or scarf joints.

Resource Conservation and Recovery Act (RCRA) The primary federal law that governs hazardous and toxic materials at operating facilities. It defines solid and hazardous waste, authorizes the EPA to set standards for facilities that generate or manage hazardous waste, and establishes a permit program for hazardous treatment, storage, and facilities.

respirator A device used to facilitate breathing in a hazardous atmosphere.

respond A support, usually a pilaster or corbel, attached to a wall and supporting one end of an arch, groin, or vault rib.

respondent The party defending a construction claim.

responsibility A bidder's ability to properly perform the contract work.

responsible bidder *See* lowest responsible bidder.

responsiveness The bid's conformance with the solicitation's salient requirements (price, quantity, quality, performance time).

rest bend A right-angle pipe fitting with an integral seat for mounting on a support. *See also* base elbow.

restitution A court-ordered money award that is intended to restore the parties to their financial position as it existed before the contract was formed.

restoration Returning an existing property to a condition that depicts its form, features and character as they appeared at a particular period of time. Restoration may involve removal of features from other periods in the property's history and reconstruction of missing features from the targeted period. (Where a building has been changed over time or additional structural elements added, the period chosen for the restoration is usually the one that reflects the highest level of aesthetics or historical significance.)

restraint (of concrete) Restriction of free movement of fresh or hardened concrete following completion of placing in formwork or molds, or within an otherwise confined space. This restraint can be internal or external and may act in one or more directions.

restricted Relative to electrical systems, it refers to areas classified hazardous; or a confined area.

restricted list of bidders *See* invited bidders.

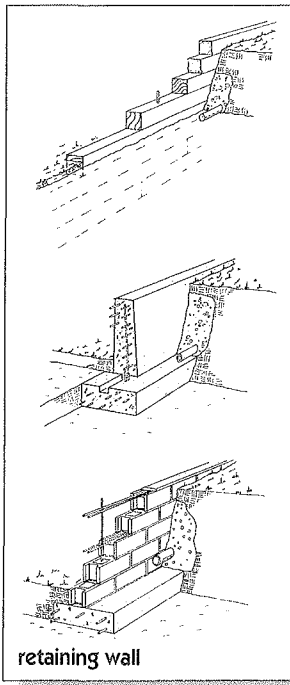
restrictive covenant An agreement between individuals, incorporated within a deed, which stipulates how land can be used. The constraints may include: the specific use to which property may be put, setback of buildings, size of yards, locations and dimensions of fences, and type of architecture. Racial and religious restrictions on inhabitants are not legally enforceable.

resurfacing The placing of a new surface on an existing pavement to improve its conformation or increase its strength.

retainage A specific portion of the contract sum that is withheld from progress payments as specified in the owner-contractor agreement.

retained percentage *See* retainage.

retaining wall **1.** A structure used to sustain the pressure of the earth behind it. **2.** Any wall subjected to lateral pressure other than wind pressure.



retardation Reduction in the rate of hardening or setting, i.e., an increase in the time required to reach initial and final set or to develop early strength of fresh concrete, mortar, or grout. *See also* retarder.

retarder An admixture that delays the setting of cement paste, and hence of mixtures such as mortar- or concrete-containing cement.

ret tempering Addition of water and remixing of concrete or mortar that has lost its workability and become too stiff. This is not usually recommended, as some of the strength is lost. *See also* tempering.

retention **1.** A percentage, usually 10%, withheld from a periodic payment to a contractor, in accordance with the owner-contractor agreement, for work completed. The retention is held until all terms of the contract have been fulfilled. **2.** The amount of preservative, fire-retardant treatment, or resin retained by treated or impregnated wood.

retention time The length of time a wastewater is retained in a clarification tank for settling of suspended solids.

retentivity The capacity of a material to hold magnetism.

reticulated Covered with crossing lines, netted.

reticuline bar Sinuously bent bars that interconnect adjacent bearing bars in a grating.

retort A vessel used to treat wood by applying various chemicals under pressure.

retract The mechanism on a dipper shovel bucket excavator that moves the bucket.

retro-commissioning (RCx) Commissioning of existing buildings.

retrofit To modify an existing structure or system within the structure to accommodate upgrading.

return The continuation, in a different direction, of a molding or projection, usually at right angles.

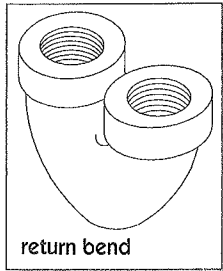
return-air Air returned from a conditioned room or space for processing and recirculation.

return-air intake An opening, usually with a control damper, through which return air reenters an air-conditioning system.

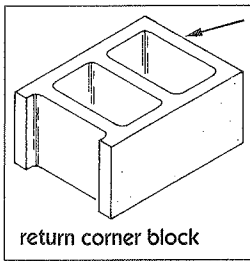
return bend

R

return bend A 180° bend in a pipe.



return corner block A concrete masonry unit with a plane surface at one end as well as the front face; used at outside corners.



return grille The grille on a return air intake, usually employing a damper.

return mains Pipes or ducts that reroute fluid or air back to the supply source.

return on investment (ROI)

A calculation in investment analysis that expresses income as a percentage of capital. There are several specific varieties in general use, such as the internal rate of return (IRR), and the rate of return on equity capital (ROE).

return pipe The drain line that returns the water from condensed heating steam to the boiler for reuse.

return system A series of ducts, pipes, or passages that returns a substance, whether it be air or water, to the source for reuse.

return wall A short wall placed perpendicular to the end of a wall to increase its stability.

revalé Stone molding that is carved after being set in place.

reveal **1.** The side of an opening in a wall for a window or door. **2.** Reveal is the depth of exposure of aggregate in an exposed aggregate finish. *See also* **exposed-aggregate finish**.

reveal pin (reveal tie) A screw or clamp located inside a window opening used to secure scaffolding to the opening.

revent pipe An individual vent that connects directly to a waste fixture and the main or branch vent pipe.

reverberation The perpetuation of sound within a space after the source has ceased, such as an echo.

reverse In plastering, a template with the reverse shape of the molding it is intended to match.

reverse-acting controllers Devices that decrease control pressure as the control variable (temperature, pressure) increases.

reverse-acting diaphragm valve A valve that opens on application of pressure on a diaphragm and closes when the pressure is released.

reverse-acting thermostat A thermostat that activates a circuit when a preset high temperature is detected.

reverse bevel A latch bolt that is inclined or sloped in the opposite direction of a regular bolt.

reverse board & batten A siding pattern in which the wider boards are nailed over the battens, producing a narrow inset.

reversed door *See* **reverse-swing door**.

reverse-swing door (reversed door)

A door that swings outward from a room.

reverse-trap water closet Toilet that has a siphonic trapway at the rear of the bowl and integral flushing action.

reversible grating A framework of bars that can be installed with either side exposed without affecting the load capabilities or appearance.

reversible lock A lock that can be adapted to fit a door of either hand.

reversible siding Resawn board siding that may be installed with either the surfaced or sawn side exposed.

reversion **1.** The tendency of a processed material to return to its original state. **2.** Chemical reaction leading to deterioration of a sealant due to moisture trapped behind the sealant.

revertible flue A flue or chimney that momentarily redirects the gas flow path downward during its normal upward ascent.

revet To face a foundation or embankment with a layer of stone, concrete, or other suitable material.

revetment Facing, such as masonry, used to support an embankment.

revibration One or more applications of vibration to concrete after completion of placing and initial compaction, but preceding initial setting of the concrete.

revolving door An exterior door consisting of four leaves set at right angles to each other and revolving on a central pivot. Used to limit the passage of air through the opening and eliminate drafts.

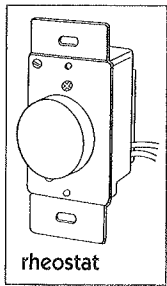
revolving shelf *See* **lazy susan**.

revolving shovel Earthmoving equipment with the shovel able to rotate independently of its support.

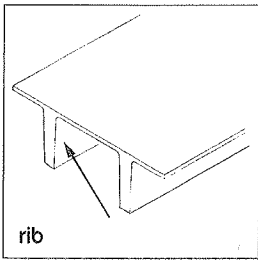
R factor, also R Value The measurement of a material's (such as insulation, windows, and roofing) resistance to the passage of heat.

rheology The science dealing with flow of materials, including studies of deformation of hardened concrete, the handling and placing of freshly mixed concrete, and the behavior of slurries, pastes, and the like.

rheostat An electric resistor, so constructed that its resistance may be varied without opening the circuit in which it is installed. Used to control the flow of electric current as in a light dimmer.

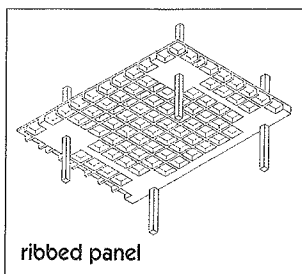


rib 1. One of a number of parallel structural members backing sheathing. 2. The portion of a T-beam that projects below the slab. 3. In deformed reinforcing bars, the deformations or the longitudinal parting ridge.



riband (ribband) See ribbon strip.

ribbed panel A panel composed of a thin slab reinforced by a system of ribs in one or two directions, usually orthogonal.



ribbed slab See ribbed panel.

ribbed vault A vault with ribs that support, or appear to support, the web of the vault.

ribbing (crimping, washboarding)

A more-or-less regular corrugation of the surface of wood, caused by differential shrinkage.

ribbing up Circular joinery made by gluing several layers of veneer with a parallel grain structure.

ribbon A narrow strip of wood or other material used in formwork.

ribbon board 1. A horizontal brace used in balloon framing where the board is applied to notches in the studs. 2. A let-in brace.

ribbon course A rugged roof texture that can be achieved by applying a triple thickness of asphalt shingles on alternate courses. This feature adds visual appeal and is especially suited for large roof areas of a long one-story building.

ribbon loading Method of batching concrete whereby the solid ingredients, and sometimes the water, enter the mixer simultaneously.

ribbon strip A horizontal board set into the studs to help support the ends of rafters or joists.

ribbon stripe A pattern on quartered veneer that has the appearance of a ribbon.

ribath (rib lath) Stiffened expanded metal lath with ribs that provide greater strength and allow for increased spacing between members. It is not used for curved surfaces.

rice hull ash A by-product from burning agricultural rice waste that can be used in applications similar to cement.

rich concrete Concrete of high cement content. See also lean concrete.

rich lime A pure lime that, when mixed with mortar, improves the plasticity or workability of the mortar.

rich mixture A concrete mixture containing a high proportion of cement.

rich mortar See fat mortar.

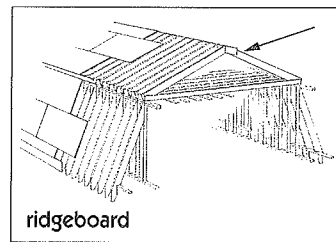
riddle A coarse sieve for separating and grading granular material.

rider cap See pile cap.

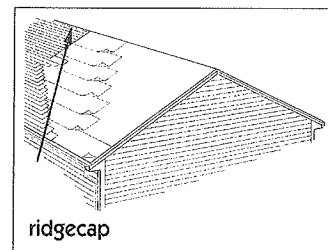
ridge The horizontal line formed by the upper edges of two sloping roof surfaces. See also ridge beam.

ridge beam A horizontal timber to which the tops of rafters are fastened.

ridgeboard (ridgepole, roof tree) The longitudinal board set on edge used to support the upper ends of the rafters.



ridgecap (ridge cap) A layer of wood or metal topping the ridge of a roof.



ridge connection See moment connection.

ridge cut See plumb cut.

ridge fillet The ridge between two depressions, as on a fluted column.

ridgepole See ridgeboard.

ridge rib A projecting structural element following the ridge of a vault.

ridge roll 1. A round wooden strip with the underside "V" cut; used to finish the upper edges of the roof surface. 2. A flexible metal covering used to cap the ridge of a roof.

ridge roof

R

ridge roof A roof with two slopes meeting at a central crest.

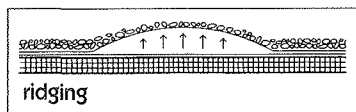
ridge shingles Shingles that cover a house's ridge board.

ridge stop The flashing that forms a watertight barrier between the edge of the roofing membrane and the vertical wall or chimney rising above it.

ridge strap A metal connector that fastens opposing rafters together to resist suction forces caused by uplift at the ridge line.

ridge vent A vent installed along the top ridge of a roof to permit air to pass through to the attic or the peak of a cathedral ceiling.

ridging **1.** An upward dislodgement of the roof membrane. **2.** Long narrow blisters in the surface of built-up roofing.



rift A narrow fissure in rock.

rift sawn See **quartersawn**.

rig **1.** To provide with equipment or gear for a special purpose. **2.** To assemble in a makeshift manner. **3.** An assembled piece of equipment, such as an oil-drilling rig.

rigger **1.** A long-haired, slender brush used for precision painting. **2.** A worker who prepares heavy equipment or loads of materials for lifting.

rigging Lines or cables used to lift heavy loads.

rigging line A line or cable used with others to lift heavy loads.

riggott A trough or gutter for draining off rainwater.

right bank The bank located on the right as one looks downstream.

right-hand door See **hand**.

right-hand lock A lock to be used on a right-hand door.

right-hand reverse door See **hand**.

right-hand rule **1.** A rule for determining polarity produced by flowing electric current. **2.** Rule-of-thumb to envision the orientation of nut movement on a bolt to loosen/tighten it. Right thumb points along threaded shaft; direction of fist opening shows direction of nut loosening.

right-hand stairway A stairway having the outside handrail on the right as one ascends.

right of first refusal The right to purchase an interest in real property if its owner decides to sell. In contracts to an option, the holder of a right of first refusal does not have the unqualified choice to buy or not to buy.

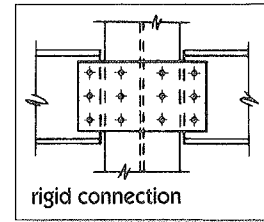
right of survivorship A feature of a joint tenancy and of tenancy by the entirety. When one owner dies, the deceased owner's share of ownership is split among the surviving owners, thereby increasing the surviving owners' proportional shares. See also **joint tenancy**.

right-of-way A strip of land, including the surface and overhead or underground space, that is granted by deed or easement for the construction and maintenance of specific linear elements such as power and telephone lines, roadways and driveways, and gas or water lines.

right-to-know A right granted to workers by the Occupational Safety and Health Act (OSHA), by which they must be informed of the risks and hazards associated with the chemicals and substances that they are required to use in the workplace.

Right to Work Law State law providing, in general, that employees are not required to join a union as a condition of retaining or receiving a job.

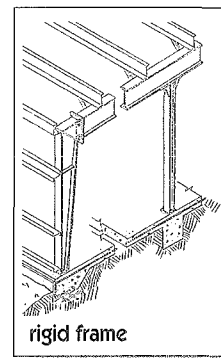
rigid connection A connection between two structural members that prevents end rotation of one relative to the other.



rigid foam See **cellular plastic**.

rigid foam insulation Panels of polyurethane foam that are used in commercial and residential construction as roof or outside wall insulation. The panels or boards include barrier board, and structural insulation panels (SIPs). The facings on the boards include metals, foil, glass fiber, kraft paper, or oriented strand board (OSB).

rigid frame A structural framing system in which all columns and beams are rigidly connected; there are no hinged joints.



rigidized The term used for the strengthening and increased rigidity of sheet metal by embossing the steel in a rolling process.

rigid metal conduit A raceway constructed for the pulling in or withdrawing of wires or cables after the conduit is in place and made of standard weight metal pipe permitting the cutting of standard threads.

rigid pavement Pavement that will provide high bending resistance and distribute loads to the foundation over a comparatively large area.

rime The rung of a ladder.

rim joist Perimeter joist for wood floor framing system. Usually referred to in conjunction with composite wood floor joists.

rim latch A surface-mounted latch.

rim lock A face-mounted door lock.

rimpull The friction forces, expressed in pounds, exerted by rubber tires on driving wheels and the contact surface.

Ringelmann chart A table of values used as a standard for determining the density of smoke emitted from a chimney.

ring network A type of network configuration in which each node is connected to two adjacent nodes to form a continuous ring-like pattern.

ring scratch awl A pointed tool made especially for use on sheet metal.

ring-shank nail A nail with ring-like grooves around the shank to improve its grip.

rip To saw lumber parallel to the grain.

riparian right A landowners right to the use of a body of water that borders his land.

ripper A device with protruding claws that is pulled by a tractor. Used to penetrate and disrupt the earth's surface up to 3' in depth.

ripping Fragmenting a rock formation by a tractor pulling a heavy tooth. *See also* ripsawing.

ripping bar *See* pinch bar.

riprap Irregularly broken, large pieces of rock, used along stream banks and oceanfront property as protection against erosion.

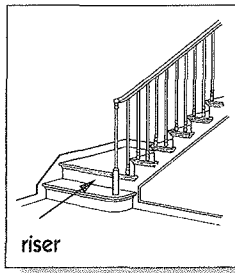
ripsaw A coarse-toothed saw used for cutting wood in the direction of the grain.

ripsawing (ripping) Sawing lumber parallel to the grain.

rise **1.** The vertical distance from the top of a tread to the top of the next higher tread. **2.** The height of an arch from springing to the crown. **3.** The vertical height from the supports to the ridge of a roof. **4.** Height difference between the crown of a road and its lowest point. **5.** *See* travel, rise.

rise and run The angle of inclination or slope of a member or structure, expressed as the ratio of the vertical rise to the horizontal run.

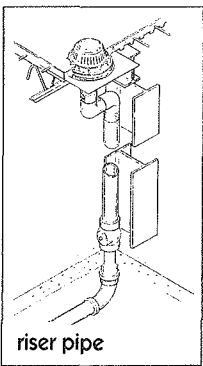
riser **1.** A vertical member between two stair treads. **2.** A vertical pipe extending one or more floors.



riser board The member forming the vertical face of a step.

riser height The vertical distance between the tops of two successive treads.

riser pipe A pipe that extends vertically from one floor level to the next for the purpose of conducting water, steam, or gas.



rising hinge (rising butt hinge) A door hinge fabricated with a slope on the knuckle which causes the door to rise when opened. A rising hinge is used when there are obstructions along the door's bottom edge, e.g., carpeting.

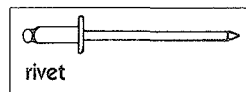
risk management An approach to management and procedure designed to prevent occurrence of culpability, potential liability, contravention of law, or other potential risk that could bring about loss in the process of building construction.

risk probability A concept applied to assess a facility's security needs based on consideration of factors such as incidence history, trends in the surrounding environment, warnings or threats, and similar events occurring at other comparable schools.

rive Splitting wood along the grain. Shingles are cut in this fashion.

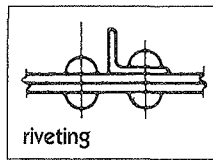
riverine profile Section through a river depicting the riverbed in relation to the flood plain and watershed drainage basin.

rivet A metal cylinder or rod with a head at one end that is inserted through holes in the materials to be fastened. The protruding end is flattened to tie the two pieces together.



riveted grating A grating assembled from straight bearing bars and bent connecting bars, which are joined at contact points by rivets.

riveting The act of fastening or securing two or more parts with rivets.



R-number

R

R-number A number used by ASHRAE to indicate the molecular structure of chemical refrigerants.

road base A mixture, typically stone and sand, used as the base for road paving.

road forms Wood or steel forms set on edge to form the side of a concrete road slab, also used as screeds.

road heater A traveling machine that prepares a road surface for treatment by blowing a flame or hot air on it.

road oil A heavy petroleum oil, usually a slow-curing asphalt.

roadway The area of a highway including the surface over which vehicles travel as well as the land along the edges, such as slopes, ditches, channels, or other gradations necessary to ensure proper drainage and safe use.

rock Slang for Sheetrock®, a well-known brand name of drywall.

rock 1 2 3 Slang for the process of attaching drywall to the walls and ceilings before taping.

rock anchor Steel rod anchored in rock by grouting used to hold temporary shoring or retaining walls around an excavation.

rock cover Top cover that is sometimes used to protect underlying layers in a cap when vegetative cover is not possible.

rock drill A high-powered pneumatic or electrically-driven device for boring holes into rock.

rock elm *Ulmus racemosa*. A lighter colored and finer textured wood than common elm, used primarily for veneer.

rockers Slang term for drywall installers.

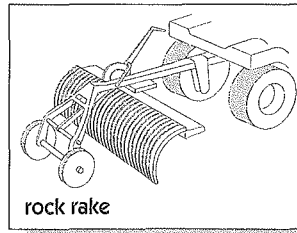
rocker shovel Mechanical tunneling shovel.

rock-faced A type of rough finish on stone. Essentially the same face that resulted when the stone was first struck from the quarry.

rock lath See gypsum board.

rock pocket A porous, mortar-deficient portion of hardened concrete, consisting primarily of coarse aggregate and open voids, caused by leakage of mortar from form, separation or segregation during placement, or insufficient consolidation. *See also* honeycomb.

rock rake Tractor attachment with multiple teeth that is used to clear trees and rocks.



rock saw A circular saw that removes a wide kerf on the upper surface of a log. A rock saw is used to remove stones or debris before a log enters the head rig.

Rockwell hardness A measure of the resistance of a material to indentation, expressed as an index number obtained by pressing a standard steel ball or diamond into the material under controlled conditions. A high index number indicates a hard material.

rock wool A type of mineral wool made by forming fibers from molten rock and slag. Used as insulation in walls and ceilings.

rod Sharp-edged cutting screed used to trim shotcrete to forms or ground wires. *See also* screed.

rod bender A power-assisted device with adjustable rollers and supports that is used for bending steel reinforcing rods into usable shapes.

rod buster The colloquial term for one who installs reinforcement for concrete.

rod cutter Trench-type, hydraulically operated, wedge-like shear, used to cut steel reinforcing rods.

roddability The susceptibility of fresh concrete or mortar to compaction by means of a tamping rod.

rodding Compaction of concrete or the like by means of a tamping rod. *See also* rod, tamping and roddability.

rod dowel *See* dowel.

rod level A device used to ensure a leveling rod or stadia rod is in the vertical position before taking any instrument readings.

rod man *See* staff man.

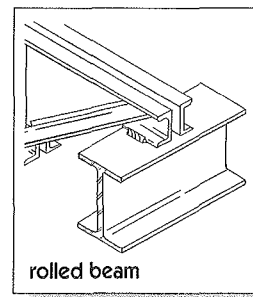
rod, tamping A round, straight, steel rod having one or both ends rounded to a hemispherical tip.

rod target (target rod) A metal disc that slides upon a track on a leveling rod, used for taking sights in surveying.

roll (noun) **1.** A quantity of sheet material wound in cylindrical form. **2.** A rounded strip of roofing fastened to and running along the ridge of a roof. **3.** Any type of rounded molding. **4.** Any heavy, metal cylinder used to flatten, smooth, or form material.

roll (verb) A slang term referring to the installation of floor joists or trusses.

rolled beam (rolled steel beam) A beam that is fabricated of steel and passed through a hot-rolling mill.

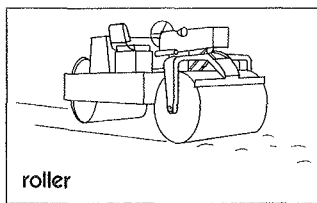


rolled glass Glass that is manufactured with a patterned surface that partially obscures vision and light.

rolled roofing *See* asphalt-prepared roofing.

rolled steel The type of steel used in windows that is produced by passing hot, solid bars through rollers until the desired configuration is achieved.

roller **1.** A heavy, self-propelled or towed device used to compact granular fill. **2.** A small hand tool used to smooth wall covering and flooring. **3.** See paint roller.



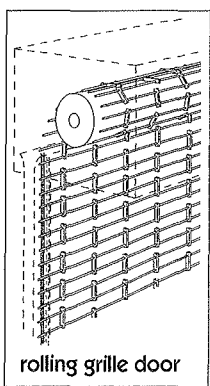
Rollerbug™ tamper The name brand of a tool used to compact fresh concrete. It is made of steel mesh on a rotating frame, and rolled along the concrete.

roller shade An automated window shade with a motor that adjusts the shade to control light, privacy, and solar heat gain.

rolling The use of heavy metal or stone rollers on terrazzo topping to extract excess matrix.

rolling doors See roll-up door.

rolling grille door A device similar to a roll-up door, but with an open grille rather than slats; used as security protection.



rolling resistance The resistance of a substrate to turning wheels on top.

rolling scaffolding A reliable, inexpensive scaffold used on interiors up to 20' in height. Suitable for close inspection and construction work on walls and ceilings.



roll insulation See insulation blanket.

roll joint A point of connection formed by rolling two edges of sheet metal together and then compressing the roll.

roll marks Parallel scratches on glass that are created in the manufacturing process as rollers pass over the glass.

roll-up door (rolling shutters) A device consisting of horizontal interlocking metal slats that ride along wall guides. When the door is opened the slats coil around a barrel assembly located above the door.

Roman brick Brick that measures 4" x 2" x 12".

Roman cement A misnomer for a hydraulic cement made by calcining a natural mixture of calcium carbonate and clay, such as argillaceous limestone, to a temperature below that required to sinter the material, but high enough to decarbonate the calcium carbonate, followed by grinding. The term is so named because its brownish color resembles ancient Roman cements produced by use of lime-pozzolan mixtures.

Romanesque architecture Style of building with massive walls, vaults and rounded arches.

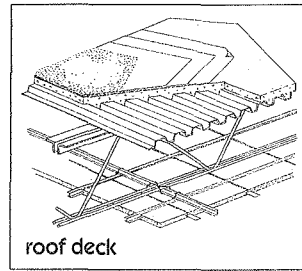
Romex The most familiar trade name for non-metallic sheathed cable.

roof The outer cover and its supporting structures on the top of a building.

roof comb A wall along the ridge of a roof to give the illusion of a taller building.

roof covering The covering material installed in a building over the roof deck. The type of covering used depends on the roofing system specified to weatherproof the structure properly.

roof deck **1.** The foundation or base upon which the entire roofing system is dependent. Types of decks include steel, concrete, cement, and wood. **2.** A flat open portion atop a roof, such as a terrace or sundeck.



roof decking Prefabricated sections of lightweight insulated waterproof panels. This type of roof deck is quickly completed and consequently inexpensive. Roof decking is made of different roofing materials, such as plywood, aluminum, steel, or timber.

roof drain A drain designed to accept rainwater on a roof and discharge it into a leader or downspout.

roofed ingile See chimney corner.

roofers Lumber used as backing for shingles or shakes on a roof, usually 1" x 4" size.

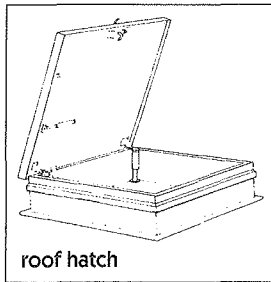
roof flange A collar that fits around a pipe penetrating through the roof making the opening watertight.

roof framing A group of members fitted or joined together to provide support for the roof covering.

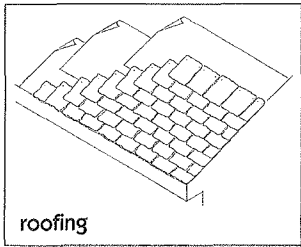
roof hatch

R

roof hatch (roof scuttle) A weather-tight assembly with a hinged cover, used to provide access to a roof.



roofing Any material that acts as a roof covering, making it impervious to the weather, such as shingles, tile, or slate.



roofing bond A guarantee by a surety company that a roof installed by a roofer in accordance with specifications will be repaired if it fails within a certain period of time. Failure must be due to normal weathering.

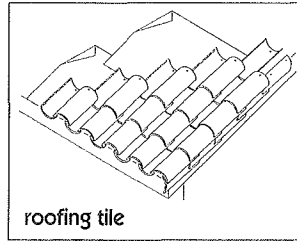
roofing bracket A bracket used in slope roof construction, having provisions for being fastened to the roof, or supported by ropes fastened over the ridge and secured to some suitable object.

roofing felt See **asphalt-prepared roofing**.

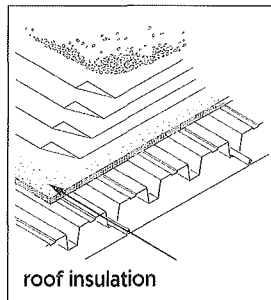
roofing nail A special-purpose, short-threaded nail with a large head, usually galvanized or aluminum with a neoprene or plastic washer to aid in fastening roof coverings.

roofing square **1.** A steel square used by carpenters. **2.** A measure of roofing material. **3.** See **square**.

roofing tile A preformed slab of baked clay, concrete, cement, or plastic laid in rows as a roofing cover. Tiles have a variety of patterns, but fall into two classifications: roll and flat.



roof insulation Lightweight concrete used primarily as insulating material over structural roof systems.



roof jack A sleeve installed around plumbing waste vent pipes.

roof joist A rafter on a flat roof that supports the roof loads; usually 2×10 's or 2×12 's.

roof live load Any external loads that may be applied to a roof deck, such as rain, snow, construction equipment, and personnel.

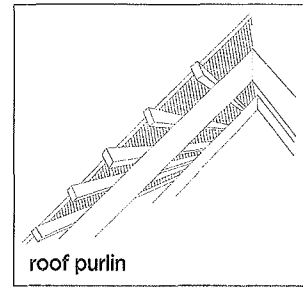
roof overhang The part of a roof that extends over the side wall or end wall of a building.

roof pitch The slope of a roof expressed as the ratio of the rise of the roof to the horizontal span. More roofing material is required to cover the increased roof area when the slope or pitch is great.

roof plate A wall plate that supports the lower end of rafters.

roof principal A roof truss.

roof purlin See **purlin**.



roof saddle See **saddle**.

roof scuttle See **roof hatch**.

roof sheathing Any sheet or board material, such as plywood or particle board, connected to the roof rafters to act as a base for shingles or other roof coverings.

roof slope The angle of a roof compared to a horizontal plane. See **roof pitch**.

roof snow load See **snow load**.

roof space The space between the roof and the ceiling of the highest room.

roof span **1.** The shortest distance between the seats of opposite common rafters. **2.** The distance across a roof.

roof structure Any structure on or above the roof of a building.

roof terminal The top point of the plumbing vent pipe as it exits through the roof, often 12".

roof tree The *ridgeboard* of a roof.

roof truss A truss used in the structural system of a roof. See also **truss**.

roof valley See **valley**.

roof vent A device used to ventilate an attic or roof cavity.

roof washer A system for diverting rainwater at the start of each rainfall away from collection tanks and cisterns, so that only the cleaner water that follows is collected for reuse.

room cavity ratio (RCR) A ratio of room dimensions used to quantify how light will interact with room surfaces. A factor used in illuminance calculations.

room controller A device that controls conditions, such as the amount of light, within a room.

room finish schedule

Information provided on design drawings specifying types of finishes to be applied to floors, walls, and ceilings for each location.

root **1.** The part of a tenon that widens at the shoulders. **2.** The point where the back or bottom of the weld meets the base metal.

root diameter A measurement of the major diameter on nuts and the minor diameter on screws.

rope **1.** Twisted strands of fiber made into strong, flexible cord. **2.** Strands of wire braided or twisted together that are used for heavy hoisting or hauling.

rope caulk A preformed, rope-like bead of caulking compound which may contain twine reinforcement to facilitate handling.

roped hydraulic elevator A car connected by cables to an operating ram. A motor-driven positive displacement pump discharges oil into the pressure cylinder that extends the ram. The ram is retracted by bleeding oil off the pressure cylinder and into a storage tank.

rope diameter The largest diameter of the cross section of a wire rope. Fiber ropes are usually measured by circumference (3.14 x diameter).

rope lay The direction in which the wires or strands are twisted during manufacture.

rope suspension equalizer A device that equalizes the tensions in hoisting cables.

rose **1.** The metal plate or escutcheon between a doorknob and the door. **2.** See **rosette**.

rose bit A bit for countersinking holes in wood.

rose nail A wrought nail with a cone-shaped head.

rosette **1.** A round pattern with a floral motif. **2.** A circular or oval, ornamental, wood plaque that is used to terminate a wood piece such as a stair rail at a wall. **3.** A decorative nailhead or screwhead.

rose window (wheel window)

Circular window with a radial pattern resembling a wheel with spokes and a hub.

rosin See **resin**.

rosin paper A paper coated with resin. Rosin paper is laid between lead sheets and sheathing to allow for thermal movement in lead roofing.

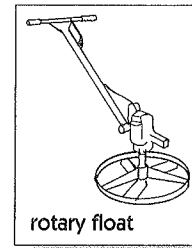
rot Decay in wood caused by fungi and other microorganisms. Rot reduces the strength, hardness, and density of the wood.

rotary compressor An air compressor using a rotary impeller driving air through a curved chamber to compress the air.

rotary cutting A method of obtaining wood veneers by rotating logs against a flat knife and peeling the veneer off in a long continuous sheet. Peeling provides a greater volume and a more rapid production than does sawing or slicing.

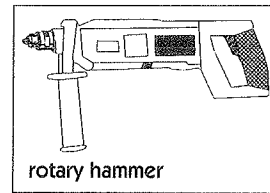
rotary drill A machine for making holes in rock or earth by a cutting bit at the end of a metal rod, usually turned by a hydraulically- or pneumatically-driven motor.

rotary float (power float) Motor-driven revolving blades that smooth, flatten, and compact the surface of concrete slabs or floor toppings.



rotary float

rotary hammer Electric boring tool that rotates with percussive action and cuts very hard materials.



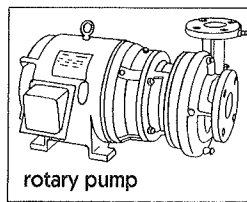
rotary hammer

rotary kiln A long steel cylinder with a refractory lining, supported on rollers so that it can rotate about its own axis, and erected with a slight inclination from the horizontal so that prepared raw materials fed into the higher end move to the lower end, where fuel is blown in by air blast. Often used to treat hazardous waste through thermal destruction. See also **kiln** and **cement**.

rotary kiln incineration (RKI)

Incineration using a rotary kiln. See **rotary kiln**.

rotary pump Any pump using gears, vane-wheels, or a screw mechanism to displace liquid, usually delivering large volumes at low pressure.



rotary pump

rotary trowel See **rotary float**.

rotating laser

R

rotating laser A leveling and surveying instrument with a revolving head that emits a laser beam horizontally. A sensor then picks up the beam to determine an elevation.

roto operator A mechanical device consisting of a crank-driven gear that operates a hinged lever; used to open and close jalousies, casement windows, and awning windows.

rotor The rotating armature or member within an electrical device or motor.

rottenstone A porous, lightweight, siliceous limestone used for polishing soft metals and wood.

rotunda A circular building or hall that is round inside and out and usually domed.

rough ashlar A block of stone before dressing, as delivered from a quarry.

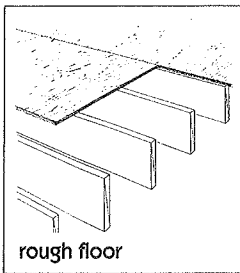
rough axed brick See **axed brick**.

roughback **1.** The concealed end of bondstone in a masonry wall. **2.** A slab of stone with one side rough and the other sawn, cut from a block fed through a gang saw.

rough-cut joint (flat joint, flush joint, hick joint) A mortar joint that is flush with the face of the brickwork.

rough estimate An estimate made without detailed investigation.

rough floor A base or subfloor, consisting of a layer of boards or plywood nailed to the floor joists.

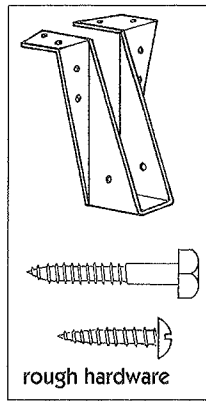


rough flooring Any materials used to construct an unfinished floor.

rough grading Cutting and filling the earth for preparation of finish grading.

rough grind The initial operation in which coarse abrasives are used to cut the projecting chips in hardened terrazzo down to a level surface.

rough hardware Any fittings, such as screws, bolts, or nails that should be concealed for a finished product.



rough-in dimensions In plumbing installations, the distance from the center of a water supply, waste opening or mounting holes to the finished wall or floor.

roughing-in **1.** The base coat in three-coat plasterwork. **2.** Any unfinished work in a construction job. **3.** Installing the concealed portion of electrical or plumbing systems to the point of connection for electrical outlets or appliances, or plumbing fixtures.

roughing-out A preliminary shaping operation in carpentry.

rough lumber Wood that has been sawn at the mill, but not trimmed. See **dressed**.

rough opening An opening in a wall or framework into which a door frame, window frame, subframe, or rough buck is fitted.

rough rendering Applying a coat of plaster without removing the irregularities.

rough service lamp An incandescent lamp with additional filament supports designed to withstand minor impact without failing.

rough sill A horizontal member laid across the bottom of an unfinished opening to act as a base during construction of a window frame.

rough work The framing, boxing, and sheeting for a wood-framed building.

round **1.** A molding that may be semicircular to full round, as in a closet rod. **2.** A turn of wire rope around a drum.

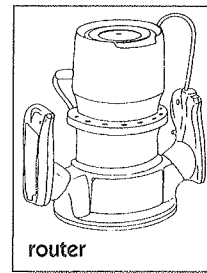
roundel **1.** A semicircular panel, window, or recess. **2.** A small, semicircular molding or astragal.

round molding (round) A fairly large molding with a circular or nearly circular cross section.

round timber Felled trees that have not been converted to lumber.

rout **1.** To deepen and widen a crack, preparing it for patching or sealing. **2.** To cut out by gouging.

router An electrically driven device with various bits for cutting grooves or channels in wood.



router gauge A carpenter's tool consisting of a guide, a bar with a scale, and a narrow chisel as a cutter; used in inlaid work to cut out narrow channels in which colored strips are laid.

router patch (Davis patch) A wood patch in plywood with straight sides and rounded ends, similar to a tongue

depressor; used to fill voids caused by defects. The router patch is one of two patch designs allowed in A-grade faces.

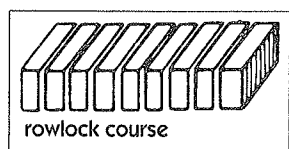
router plane (router plough, router plow) A woodworker's plane for cutting grooves or channels in wood.

rover A member that is curved, typically molding.

row house A house in a row of houses separated by party walls and covered by a continuous roof.

rowlock course (bull header)

Brick pattern in which bricks are set on their face edges with the ends visible in the wall face.



row spacing The measured distance between the centers of mechanical fasteners in a row.

royals Shingles with 24" edges and a thickness of 1/2" at the butt.

rubbed brick Brick that has one or more smooth faces.

rubbed finish **1.** On woodwork, a dull finish obtained from hand rubbing with a rag or pad saturated with water or oil and pumice. **2.** A finish obtained by using an abrasive, often a carborundum stone, to remove surface irregularities from concrete. *See also sack rub.*

rubbed joint A process for joining two narrow boards. Both boards are planed smooth, and then coated with glue and rubbed together until all air pockets and excess glue are expelled from the joint. No clamping is necessary, and the joint is extremely strong.

rubbed work Masonry work having a rubbed finish.

rubber **1.** A highly resilient natural material manufactured from the juice

of rubber trees and other plants. **2.** Any of various synthetically manufactured materials with properties similar to natural rubber. **3.** A cushioned backing for a carpet.

rubber-emulsion paint *See latex paint.*

rubber set *See false set.*

rubber silencer (bumper) A small round rubber device that attaches to a rabbeted doorjamb which silences the noise caused by a slamming door.

rubber tile A soft and yielding floor covering that reduces the transmission of impact noises produced by walking or from other causes.

rubber-tired roller A machine for compacting and kneading soil using pneumatic-tired rollers.

rubbing brick A silicon-carbide brick used to smooth and remove irregularities from surfaces of hardened concrete.

rubble Rough stones of irregular shape and size, broken from larger masses by geological processes or by quarrying.

rubble concrete **1.** Concrete similar to cyclopean concrete, except that small stones, such as one man can handle, are used. **2.** Concrete made with rubble from demolished structures. *See also cyclopean concrete.*

rub brick *See rubbing brick.*

ruff sawn A designation for plywood paneling or siding that has been saw-textured to provide a decorative, rough-sawn appearance.

rule **1.** A straightedge with graduations used for measuring, laying out lengths, or drawing straight lines. **2.** A straightedge for working plaster to a plane surface.

rule joint A pivoted joint connecting two flat strips, and allowing relative rotation around the pivot.

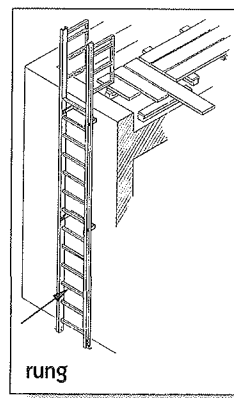
rule of thumb A statement or formula that is not exact but is close enough for practical work.

ruling pen A pen used by draftspersons to draw ink lines of uniform thickness.

run **1.** In plumbing, a pipe or fitting that continues in the same straight line as the direction of flow. **2.** In roofing, the horizontal distance between the outer face of the wall and the roof ridge. **3.** In stairs, the horizontal distance from the face of the first riser to the face of the last riser. **4.** Series of surveyed elevation changes in one direction. **5.** To sieve plaster or putty. **6.** Window sash.

runaround system A heat recovery system in which coils in an exhaust duct transfer a portion of the exhaust air heat to a fluid. The fluid is then circulated to coils that give up a portion of the fluid's heat to the air in a cold air duct.

rung A bar, usually of circular cross section, used as a step in a ladder.



run-in-place A method of producing ornamental plaster on-site, typically on a workbench. The plaster is attached to the wall after setting.

run molding A formed molding of plaster or similar material formed by passing a template over the plastic material.

runner **1.** The lengthwise horizontal bracing or bearing members. **2.** A cold-rolled channel used to support steel studs in a partition or ceiling tile.

running

R

running **1.** Descriptive of a repeating design in a band having a smooth progression. **2.** Forming a cornice of plaster or similar material in place with a running mold. **3.** Operating a powered hand tool, particularly a drill.

running bond See *stretcher bond*.

running foot A linear foot. The term is a measurement of the actual length of a piece of lumber, without regard to the thickness or width of the piece.

running ground Earth in a semi-plastic state that will not stand without support.

running inch A linear inch. The term is a measurement of the actual length of a piece of lumber. See also *running foot*.

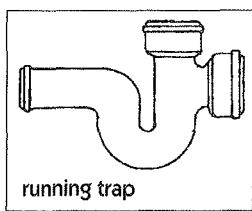
running mile rate A charge that includes all miles traveled by the transporter.

running mold A template shaped to a desired cornice and mounted on a wood frame; used by plasterers to form a molding or cornice in place by applying plaster as the mold is moved along the ceiling line.

running screed A narrow strip of plaster used in place of a rule to guide a running mold.

running shoe A metal guide on a running mold to prevent wear and allow it to slide freely on a rule.

running trap A U-shaped pipe fitting installed in a drain line to prevent the backflow of sewer gases.



run-of-bank gravel See *bank-run gravel*.

runoff Water that is carried away from, rather than absorbed by, the area on which it falls.

runs with the land Benefits to parcels, such as covenants and restrictions, that "run" with the land following its sale.

runway Decking over an area of concrete placement, usually of movable panels and supports, on which buggies of concrete travel to points of placement.

ruptured grain Breaks in veneer that have resulted from cutting or irregular grain.

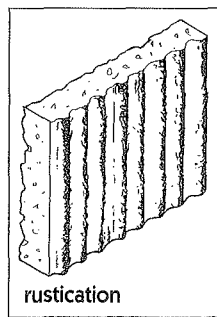
rupture disk A pressure-activated safety device consisting of a breakable disk that bursts at a predetermined pressure.

rust Any of various powdery or scaly reddish-brown or reddish-yellow, hydrated, ferric oxides formed on the surface of iron or steel that is exposed to moisture and air. Rust eventually will weaken or destroy the material if allowed to progress.

rust bloom Discoloration of a surface finish indicating the early stages of rust.

rusticated A formed or cut reveal in concrete masonry or stone used to highlight or conceal joints in concrete, masonry, or stone fascia.

rustication Providing a continuous groove in vertical concrete at a preferred location by applying a form strip prior to placing concrete, and removing it after concrete has set.



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

rustic brick A brick that has a rough-textured finish produced by covering it with sand, wire brushing, or impressing it with a pattern. These bricks are often in a variety of colors.

rustic finish (washed finish) A type of terrazzo topping in which the matrix is recessed by washing prior to setting so as to expose the chips without destroying the bond between chip and matrix. A retarder is sometimes applied to the surface to facilitate this operation. See also *exposed aggregate finish*.

rustic joint A deeply sunk mortar joint that is accented by beveling the edges of the adjacent stone.

rustic stone Any rough, broken stone suitable for masonry with an uneven appearance, most commonly limestone or sandstone, usually set with the longest dimension horizontal.

rustic woodwork Decorative or structural woodwork made of unpeeled logs and saplings.

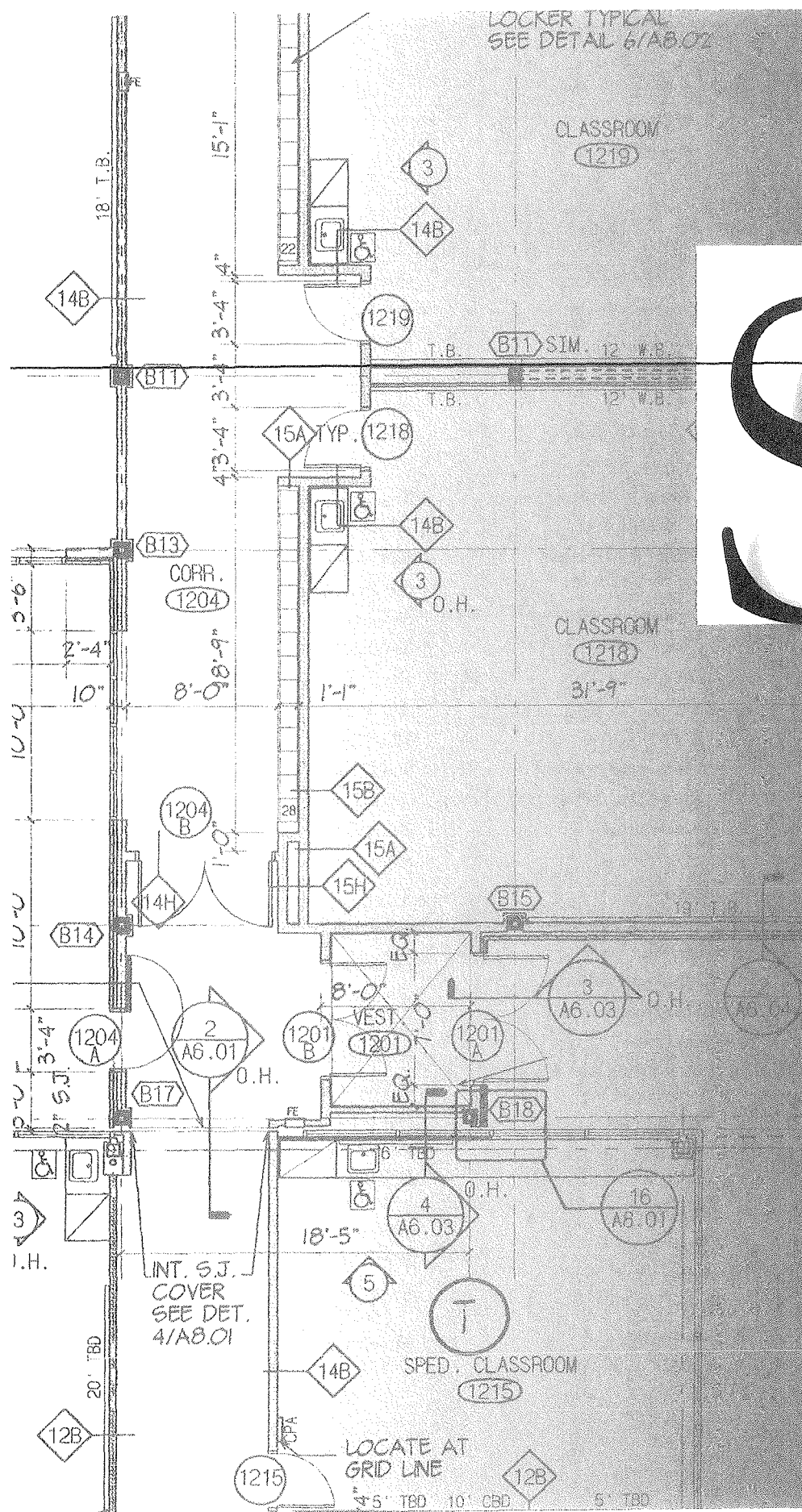
rust-inhibiting paint See *anticorrosive paint*.

rust joint A watertight pipe connection that uses iron filings as a catalyst to induce rusting in iron pipe joints.

rust pocket An area in the bottom of a ventilating pipe for the collection and removal of rust and debris.

rutile **1.** A reddish-brown to black natural mineral. **2.** A form of titanium dioxide used in paints and fillers.

R value A measure of a material's resistance to heat flow at a given thickness of material. The term is the reciprocal of the U value. The higher the R value, the more effective the particular insulation.





Abbreviations

The abbreviations listed below are commonly used in the construction industry.

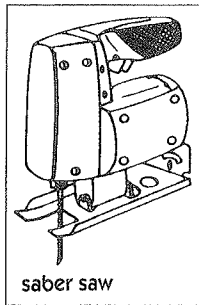
S side, south, southern, seamless, subject, sulphur	SBS sick building syndrome	SHGC solar heat gain coefficient
S1E surfaced one edge	SC site closeout, substantial completion	shp shaft horsepower
S1S surfaced one side	scba self-contained breathing apparatus	SHSS site health and safety supervisor
S1S1E surfaced one side and one edge	sch school	sht sheet, sheath
S1S2E surfaced one side and two edges	SCH schedule	Si silicon
S2E surfaced two edges	scp spherical candlepower	SI system integrator
S2S surfaced two sides	SCS structured cabling system	SIA Security Industry Association
S2S1E surfaced two sides and one edge	SD sea-damaged, standard deviation	SIC Standard Industrial Classification
S2S&CM surfaced two sides and center matched	S/D shop drawings	sid siding
S2S&SL surfaced two sides and shiplapped	SDA specific dynamic action	SIM similar
S4S surfaced four sides	Sdg siding	SJI Steel Joist Institute
S4S&CS surfaced four sides and caulking seam	SDV switched digital video	Sk sack
SA smart actuator, system air	Se selenium	SK sketch
S/A shipped assembled	S/E square-edged	SKU stock keeping unit
SAB sound attenuation batt, blanket, or board	sec second	sky skylights
SAC security and access control	SECT section	S/L, S/LAP shiplap
SAE Society of Automotive Engineers	sed sediment, sedimentation	SL&C shipper's load and count
SAF safety	SEER Seasonal Energy Efficiency Ratio	slid sliding
SAFB sound attenuation fire batt	sel select, selected	SM standard matched, surface measure
SAN sanitary	Sel select	SMACNA Sheet Metal and Air Conditioning Contractor's National Association
S&E surfaced one side and edge	sep, SEP separate	s mld stuck mold
S&G studs and girts	SERI Solar Energy Research Institute	SMS sheet-metal screw
S&H staple and hasp	SERV service	so south
S&M surfaced and matched	SE&S square edge and sound	SO seller's option
sanit sanitation	SE Sdg square-edge siding	SOC security operations center
SAP sampling and analysis plan, security access and parking	SEW sewer	SOHO small office/home office
sar supplied air respirator	sf, SF square foot, surface foot, specialty fabricator, supply fan	soln solution
sat saturate, saturation	SFPE Society of Fire Protection Engineers	SOO sequence of operations
SAT supply air temperature	SFRC steel-fiber-reinforced concrete	SOP standard operating (or operations) procedure
SB1S single bead one side	Sftwd softwood	SOV shutoff valve
SBA Small Business Association	sfu supply fixture unit	SOW statement of work
SBC Standard Building Code	SG slash grain	sp specific, specimen, spirit, single pitch (roof)
	SGD sliding glass door	SP soil pipe, standpipe, self-propelled, single pole, static pressure
	sh shingles	
	SH sheet, shower, single-hung	
	shf superhigh frequency	

SPEC specification	STS shared tenant services, static transfer switch
sp gr, SP GR specific gravity	st sash steel sash
sp ht specific heat	ST W storm water
SPKR loudspeaker	sty story
spl spline	sty hgt story height
SPL special	SUB substitute
spr spruce	sub fl subfloor
SPT standard penetration test	subpar subparagraph
sp vol specific volume	subsec subsection
sq square	sup supplementary, supplement
sq e square edge	SUP supply
sq E&S square edge and sound	supp supplement
sq ft square foot	SUPSD supersede
sq in square inch	supt, SUPT, SUPER superintendent
sq yd square yard	SUPV supervise
SR sedimentation rate, service request	supvr supervisor
ss single strength (glass)	sur, SUR surface
SS, S/S stainless steel, smart sensor, sustainable site	surv survey, surveying, surveyor
sst standing seam tin (roof)	svc service
SST stainless steel	SVE soil vapor extraction
st stairs, stone, street	sw switch
ST steam, street, supply temperature	SW switch, seawater, southwest
STC sound transmission class	SWBD switchboard
std, STD standard	SWG standard wire gauge
Std M standard matched	SY square yard
STG storage	sy jet syphon jet (water closet)
STK stock, select tight knot	SYM symmetrical
STL steel	SYN synthetic
STP standard temperature and pressure, shielded twisted pair	SYS system
Stpg stepping	syst system
str stringers	
Str structural	
STR strike	
STR1E straight line rip one edge	
Struc structural	

S

Definitions

saber saw A hand-held power saw with a reciprocating blade extending through the base of the saw.



sabin A unit of measure used to rate the sound absorption qualities of a material or assembly. Equal to one foot of a perfectly absorptive surface.

Sabinite An early acoustical plaster, produced by Keasbey and Mattison, consisting of gypsum plaster and a fibrous or porous aggregate, such as wood, mineral wool, cork, or asbestos.

sack A certain quantity of cement, typically 94 lbs. (U.S.) and 87.5 lbs. (Canada) for Portland or air-entraining Portland cement and as indicated for other cement types. *See also* bag.

sacking Correcting concrete surface defects by applying a mixture of cement and sand and rubbing with burlap or another coarse material.

sack joint A flush masonry joint that has been wiped or rubbed with a rag or an object such as a rubber heel or a burlap sack.

sack mix An indication of the quantity of Portland cement in a cubic yard of concrete mix.

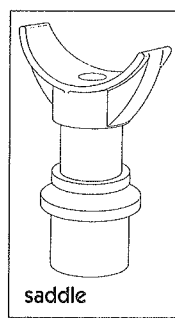
sack rub (sack finish) A finish for formed concrete surfaces, designed to produce even texture and fill all pits and air holes. (*See also* bug holes.) After dampening the surface, and before it dries, a mixture of dry cement and sand

is rubbed over it with a wad of burlap or a sponge-rubber float to remove surplus mortar and fill the voids.

sacrificial elements Any material that cannot be successfully salvaged intact and is sacrificed in order to gain access to install concealed systems or to successfully salvage historic materials for later reinstallation.

sacrificial protection The use of a metallic coating, such as zinc-rich paint, to protect steel. In the presence of an electrolyte, such as salt water, the metallic coating dissolves instead of the steel.

saddle **1.** A fitted device used with hangers to support a pipe. **2.** A series of bends in a pipe over an obstruction. **3.** A short horizontal member set on top of a post as a seat for a girder. **4.** Any hollow-backed structure with a shape suggesting a saddle, as a ridge connected to two higher elevations or a saddle roof. **5.** *See* threshold. **6.** *See* cricket.



saddleback A coping stone with its top surface sloped from a high line in the center to either edge.

saddleback board *See* threshold.

saddle-backed coping *See* saddleback.

saddleback joint *See* saddle joint (2.).

saddleback roof *See* saddle roof.

saddle bar One of the horizontal iron bars across a window opening to secure leaded lights.

saddle bead A glazing bead or channel for securing two panes of glass together.

saddle bend A bend made in a conduit to provide clearance where it crosses another conduit.

saddle block The boom swivel block through which the stick of a dipper shovel slides.

saddle board A board used to cover the joint at the ridge of a pitched roof.

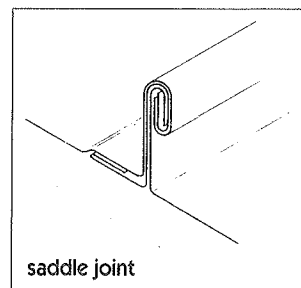
saddle coping *See* saddleback.

saddle fitting A type of gasketed fitting clamped around the exterior of a pipe; used when a connection to a previously installed pipe is required.

saddle flange A flange that is curved to conform to the surface of the boiler or tank to which it is welded, riveted, or otherwise attached, and designed to accept a threaded pipe.

saddle flashing Flashing installed over a cricket.

saddle joint **1.** A joint in sheet-metal roofing, in which one end of one sheet is folded downward over the turned-up edge of the adjacent sheet. **2.** A stepped joint in a projecting masonry course to prevent the penetration of water.



saddle piece A metal cricket used in sheet-metal roofing.

saddle roof A roof with two gables and one ridge.

saddle scaffold A scaffold erected so as to bridge the ridge of a roof, usually used during chimney repair.

safe **1.** A built-in or portable chamber used to protect materials or documents from fire and/or theft. **2.** A pan or other collector placed beneath a pipe or fixture to collect leakage or overflow.

safe-edge A strip-form detector mounted on the leading edge of an elevator door, it will reopen or close slowly if programmed to do so. The safe-edge is vertically mounted to extend from the bottom to the top of a door panel.

safe leg load The load that can safely be directly imposed on the frame leg of a scaffold. *See also* allowable load.

safe load The maximum load on a structure that does not produce stresses greater than those allowable.

safe room or shelter-in-place room

A building space designed and constructed to provide protection in a natural or other disaster. The space may be structurally reinforced and may have limited air exchange.

safety belt A belt-like device worn around the waist and attached to a life-line or structure to stop a worker during a fall.

safety can An approved closed container, of not more than five gallons capacity, having a flash-arresting screen, spring-closing lid, and spout cover; so designed that it will safely relieve internal pressure when subjected to fire exposure.

safety curtain A heavy iron or fiberglass curtain used in auditoriums to prevent fire spread. Also referred to as a fire curtain.

safety factor *See* factor of safety.

safety fuse A cord containing black powder or other burning medium encased in flexible wrapping and used

to convey fire at a predetermined and uniform rate for firing blasting caps.

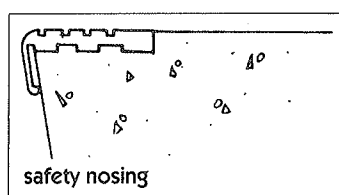
safety glass *See* wire glass, tempered glass, and laminated glass.

safety-instrumented system

An independent system that monitors, identifies certain problem conditions, and/or provides measures to correct for them.

safety lintel A load-carrying lintel positioned behind a more decorative but somewhat less functional lintel, as in the aperture of a window or door.

safety nosing An abrasive, nonslip stair nosing whose surface is flush with the tread against which it is placed.

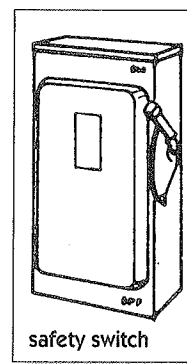


safety shoe A workman's shoe with a steel-protected toe and low-slip sole and heel.

safety shutoff device A device in a gas burner that will shut off the supply of gas if the flame is extinguished.

safety stock The average amount of stock on hand when a replenishment quantity is received. Its purpose is to protect against the uncertainty in demand and in the length of the replenishment lead time.*

safety switch In an interior electric wiring system, a switch enclosed within a metal box that has a handle protruding from the box to allow switching to be accomplished from outside the box.



safety time In a time series planning system, material is frequently ordered to arrive ahead of the forecast requirement date to protect against forecast error. The difference between the forecast requirement date and the planned in-stock date is safety time.*

safety tread A tread on a stair that has a roughened surface or roughened inserts to improve traction.

safety valve *See* pressure-reducing valve.

safe working pressure The maximum working pressure at which a vessel, boiler, flask, or cylinder is allowed to operate, as determined by the American Society of Mechanical Engineers Boiler Code; usually so identified on each individual unit.

safflower oil An oil obtained from safflower seeds that has properties similar to linseed oil and is used in paints.

safing **1.** Noncombustible material used as a fire barrier around the perimeter of a floor or around protrusions or penetrations. **2.** In ductwork, a type of barrier or similar device installed around a component to ensure that air flows through that component and not around it.

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safing off

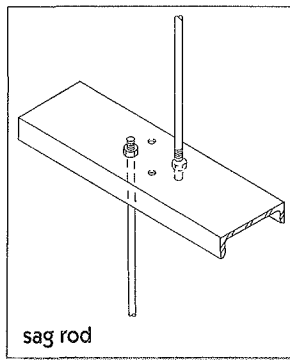
S

safing off Installation of fire safety insulation around floor perimeters, between floor slab and spandrel panels. Insulation helps retain integrity of fire-resistance ratings.

sagging **1.** Subsidence of shotcrete material from a sloping, vertical, or overhead placement. **2.** The condition of a horizontal structural member bending downward under load. *See also* **sloughing**. **3.** A paint defect where paint runs after it has been applied.

sag member *See* sag rod.

sag rod A tension member used to limit the deflection of a girt or purlin in the direction of its weak axis or to limit the sag in angle bracing.



sailing course *See* stringcourse.

sailor A rectangular masonry unit, such as a brick, that is set upright with its largest side facing out.

salamander A portable source of heat, customarily oil-burning, used to heat an enclosure around or over newly placed concrete to prevent the concrete from freezing.

sal ammoniac (ammonium chloride)
A material used in soldering flux and iron cement.

sales contract An agreement between a seller and a purchaser. Typically includes items to be purchased, guarantees, date of delivery, closing costs, and recourse of parties in event contract is not fulfilled.

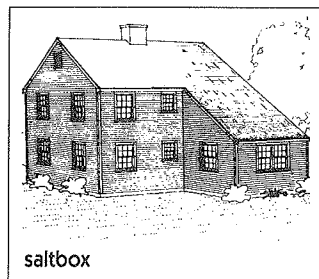
sales forecast A prediction or estimate of sales, in dollars or physical units, for a specified future period under a proposed marketing plan or program and under an assumed set of economic and other forces outside the unit for which the forecast is made. The forecast may be for a specified item of merchandise or for an entire line.*

salient Descriptive of a projecting part of an object or member, as a salient corner.

sally A projection, such as the end of a rafter beyond the notch, which has been cut to fit a plate or beam.

salmon brick (chuff brick, place brick)
Comparatively soft and underburnt brick, usually because of its high placement in the kiln, and so named because of its color.

saltbox A wood-framed house, common in colonial New England, with a short, pitched roof in front and a roof that sweeps down to the ground in back.



salt-glazed brick (brown-glazed brick)
Brick whose surface faces have a lustrous glazed finish resulting from the thermochemical reaction between silicates of clay and vapors of salt or other chemicals during firing.

salt-glazed tile Facing tile with a lustrous glazed finish, obtained by thermochemical reaction between silicates of clay and vapors of salt or other chemicals during firing.

salt treatment One method of preserving wood, using any of various waterborne

salts to impregnate the wood. Among the more widely used systems are Wolman and Osmose salts.

salvage The remaining value of property after it has been partially damaged. Salvage can also mean the act of saving and preserving such partially damaged property, so as to prevent further loss.

salvage log A detailed record kept by salvage contractors documenting all removed components that are scheduled for reuse on a project.

salvage value The value assigned to the piece of equipment at the end of the depreciation period.

samples Examples of workmanship establishing the standards against which the rest of the work will be measured. Includes products, materials, and equipment as well.

sampling approach A methodology for determining the cost of an asset within a construction project. Uses a model to analyze identical types of construction and is most popular for redundant types of projects, such as retail chain stores.

Sanborn maps Fire insurance maps found in municipal planning departments, libraries, universities, and historical society collections.

Sancoustic Modular sheet metal product with perforations, baked enamel finish, and a rock wool lining, which served as the first form of acoustic tile.

sand **1.** Granular material able to pass through the 3/8" sieve, almost entirely passing the No. 4 (4.75-millimeter) sieve, and predominantly retained on the No. 200 (75-micrometer) sieve, and resulting from natural disintegration and abrasion of rock or processing of completely friable sandstone. **2.** That portion of an aggregate passing the No. 4 (4.75-millimeter) sieve, and resulting from natural disintegration and abrasion of rock or processing of completely friable sandstone. *See also* **fine aggregate**. *Note:* The definitions are alternatives to be applied under

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differing circumstances. Definition **1.** is applied to an entire aggregate either in a natural condition or after processing. Definition **2.** is applied to a portion of an aggregate. Requirements for properties and grading should be stated in the specifications. Fine aggregate produced by crushing rock, gravel, or slag commonly is known as manufactured sand.

sand, Ottawa See **Ottawa sand**.

sand asphalt A mixture of ungraded sand and liquid asphalt used for an economical base or wearing surface for pavements.

sandbag A canvas bag that is filled with sand and used as a counterweight or for emergency damming of water flow.

sandblast A system of cutting or abrading a surface, such as concrete, by a stream of sand ejected from a nozzle at high speed by compressed air. Sandblasting is often used for cleanup of horizontal construction joints or for exposure of aggregate in architectural concrete.

sand box (sand jack) A tight box filled with clean, dry sand, on which rests a tight-fitting timber plunger that supports the bottom of posts used in centering. A plug from a hole near the bottom of the box permits the sand to run out when it is necessary.

sand clay A naturally occurring sand that contains about 10% clay, or just enough to make the material bind tightly when compacted.

sand-coarse aggregate ratio Ratio of fine to coarse aggregate in a batch of concrete, by weight or volume.

sand cone test A test used to measure soil density that involves drilling a hole, filling it with sand, and then measuring the sand's weight and volume.

sand-dry Descriptive of a stage in the drying process of paint where sand will not adhere to the surface.

sanded Panel products that have been processed through a machine sander to provide a smooth surface on one or both sides. In sanded plywood, A- or B-grade veneers are used for one side of the panel.

sanded bituminous felt See **asphalt-prepared roofing**.

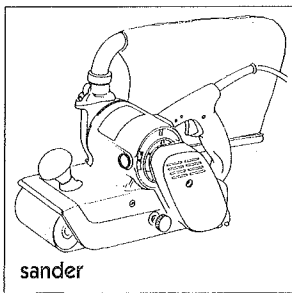
sanded-face shingle A shingle with retrimmed edges and butts that has been sanded to remove saw marks, etc., and is to be applied to a wall as part of a decorative effect.

sanded fluxed-pitch felt A felt that is saturated with a fluxed coal tar, coated on both sides with the same material, sanded, and rolled for handling.

sanded grout See **sand grout**.

sand equivalent A measure of the relative proportions of detrimental fine dust or clay-like material in soils or fine aggregate.

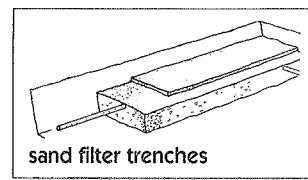
sander A machine designed to smooth wood and remove saw or lathe marks and other imperfections. Sanders range in size from hand-held to large drums or belts capable of surfacing a full-size panel.



sand-faced brick A brick formed in a mold that has been sprinkled with sand to facilitate removal.

sand filter A bed of sand laid over graded gravel, used as a filter for a water supply.

sand filter trenches A network of sewage-effluent-filtering trenches incorporating perforated pipe or drain tiles surrounded by fine sand sandwiched between coarse aggregate, and equipped with an underdrain to remove whatever material has passed through. The trenches are used to remove solid or colloidal material that cannot be removed by sedimentation.



sand finish **1.** In plastering, a textured final coat, usually containing sand, lime putty, and Keene's cement. **2.** A smooth finish derived from rubbing and sanding the final coat.

sand-float finish A rough plaster finish obtained by using a wood float.

sand grout (sanded grout) Any grout in which fine aggregate is incorporated into the mixture.

sandhog A laborer who works under compressed air conditions, as in underwater tunnel construction.

sanding block A device to hold a piece of sandpaper while sanding by hand.

sanding machine A stationary machine having a moving belt, disk, or spindle with an abrasive surface, usually a sandpaper; used for smoothing surfaces.

sanding sealer A clear-coat wood sealer that fills the pores of raw wood, preventing the finish from penetrating into the grain.

sand interceptor (sand trap) A watertight device that can be directly or indirectly connected to a drainage system to intercept and prevent sand or other solids from passing into the system.

sand jack See **sand box**.

sand-lime brick See **calcium-silicate brick**.

sandpaper

S

sandpaper Strong, tough paper coated on one side with glue or other adhesive material, into which an abrasive such as flint, silica, or aluminum oxide has been embedded. The resulting product is used primarily for resurfacing or cutting wood, metal, plastic, or glass and is available in an extensive range of coarseness or grit.

sandpile A foundation formed by ramming sand into a hole left by a pile that was driven and removed.

sand pine *Pinus clausa*. A type of pine found almost exclusively in north central Florida, where it grows in very sandy soil. The wood is used mostly for pulp.

sand plate A flat steel plate or strip welded to the legs of bar supports for use on compacted soil.

sand pocket A zone in concrete or mortar containing sand without cement.

sand seal Emulsified asphalt covered with fine aggregate applied to pavement to improve skid resistance and to prevent air and water penetration.

sandstone A cemented or otherwise compacted sedimentary rock composed predominantly of sand grains. It has been used as cut stone for carved ornament.

sand streak A streak of exposed fine aggregate in the surface of formed concrete caused by bleeding.

sand trap See sand interceptor.

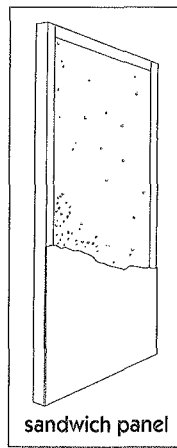
sandwich beam See flitch beam.

sandwich construction

Composite construction usually incorporating thin layers of a strong material bonded to a thicker, weaker, and lighter core material, such as rigid foam or paper honeycomb, to create a product that has high strength-to-weight and stiffness-to-weight ratios.

sandwich panel **1.** A panel formed by bonding two thin facings to a thick, and usually lightweight, core. Typical

facing materials include plywood, single veneers, hardboard, plastics, laminates, and various metals, such as aluminum or stainless steel. Typical core materials include plastic foam sheets, rubber, and formed honeycombs of paper, metal, or cloth. **2.** A prefabricated panel that is a layered composite formed by attaching two thin facings to a thicker core. An example is precast concrete panels, which consist of two layers of concrete separated by a nonstructural insulating core.



sandwich panel

sanitary code Municipal regulations established to control sanitary conditions of establishments that produce and/or distribute food, serve food, or provide medical services.

sanitary cove A piece of metal used in a stair between the surface of the tread and the face of the riser to facilitate cleaning.

sanitary cross In a soil pipe system, a cross pipe, whose 90° transitions are curved to direct the flow from the branches toward the direction of the main flow.

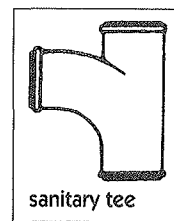
sanitary engineering That part of civil engineering related to public health and the environment, such as water supply, sewage, and industrial waste.

sanitary sewage (domestic sewage)

Sewage containing human excrement and/or household wastes that originate from sanitary conveniences of a dwelling, business, building, factory, or institution. Does not include storm water.

sanitary sewer **1.** A sewer line designed to carry only liquid or waterborne waste from the structure to a central treatment plant. **2.** The conduit or pipe that carries sanitary sewage.

sanitary tee A T-fitting for pipe, having a slight curve in the 90° transition so as to channel flow from a branch line toward the main flow.



sanitary tee

sanitary ware Devices of porcelain enamel, stainless steel, or other material, such as bathtubs, sewer pipes, toilet bowls, and washbasins.

Santorin earth A volcanic *tuff* originating on the Grecian island of Santorini and used as a *pozzolan*.

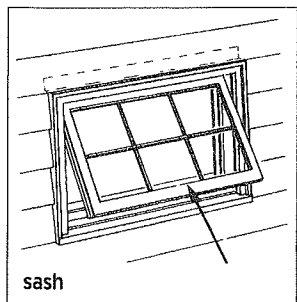
sap grade **1.** A grade of southern yellow pine export lumber. **2.** KD saps.

saponification Gray residue that has collected on the inside surface of a concrete sub-grade wall or floor. It is the result of moisture leaching chemicals from the concrete.

sapwood The wood just beneath the bark of a tree, normally lighter in color than the rest of the wood, but usually not as strong as the rest of the wood.

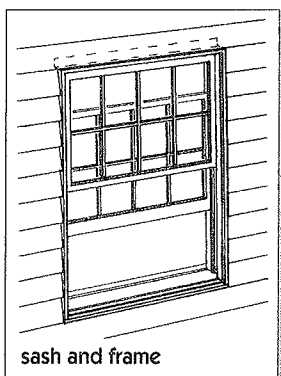
sarking (sarking board) A thin board employed in sheathing applications, as under the tiles or slates of a roof.

sash (window sash) The framework of a window that holds the glass.



sash adjuster See casement stay.

sash and frame A preassembled unit consisting of a cased frame and a double-hung window.



sash balance A spring-loaded device, usually a spring balance or tape balance, used as a counterbalance for a sash in a double-hung window. A sash balance replaces sash weights, cords, and pulleys.

sash bar See glazing bar.

sash block See jamb block.

sash center (sash plate) The support for a horizontally pivoting sash or transom, consisting of a socket that is secured to the jamb or frame, and a pin on which the sash or transom actually pivots.

sash chain A metal chain used in place of a sash cord to connect a vertically hung sash with its counterweight.

sash chisel A chisel having a wide blade honed on both sides, used for deep cutting, such as cutting the mortises in pulley stiles.

sash cord A rope connecting a sash with its counterweight in a double-hung window.

sash-cord iron A metal holder used to connect a sash cord or chain to the window.

sash counterweight See sash weight.

sash door See glazed door.

sash fast (sash fastener, sash holder) Any fastening device that holds two window sashes together to prevent their opening or rattling. A sash fast is usually attached to the meeting rails of a double-hung window.

sash fillister 1. A rabbet cut in a glazing bar to receive the glass and glazing compound. 2. A special plane for cutting such rabbets.

sash hardware All accessories used to balance a vertically hung sash, including chains or cords, weights, and pulleys.

sash holder See sash fast.

sash lift See window lift.

sash lift and hook A sash lift having a locking lever that holds the window fixed by contact with a strike in the frame. Raising the sash automatically releases the strike.

sash line See sash cord.

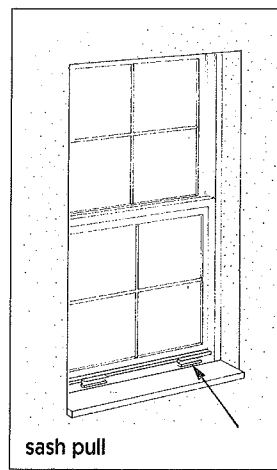
sash lock A sash fast that is controlled by a key. See also sash fast.

sash plane A carpenter's plane having a notched cutting blade for trimming the inside of a door frame or window frame.

sash plate (sash center) One of the pair of plates constituting the pivoting mechanism for a horizontally pivoting sash or transom.

sash pocket See pocket.

sash pull A plate, with a recess for fingers, set in a sash rail, or a handle attached to a rail to use in raising or lowering a window.



sash pulley A pulley mortised into the side of the frame of a double-hung window. The sash chord or chain passes over the pulley to the sash weight.

sash ribbon A metal tape used in place of a sash chord or chain.

sash saw 1. A small miter saw used to cut the tenons of sashes. 2. A saw fitted in a frame that moves vertically.

sash schedule Information provided on design drawings regarding the selection and installation of window sashes.

sash spring bolt See window spring bolt.

sash stop (window stop) A small strip fastened to a cased frame to hold a sash of a double-hung window in place.

sash stuff Wood cut to standard sizes and shapes for use in making window frames.

sash tool A round brush used in painting items such as window frames and glazing bars.

sash weight A weight, usually cast iron, used to balance a vertically hung window.

sash window

S

sash window Any window, but usually a double-hung window, having a vertically or horizontally sliding sash.

satin sheen Descriptive of a paint film with a subdued gloss resembling satin.

satinwood The hard, fine-grained, pale to golden yellow wood of the gum arabic tree that is sometimes used in cabinetwork and decorative paneling.

satisfaction The cancellation of an encumbrance on a piece of real property, most often resulting in the payment of whatever debt had been secured by it.

satisfaction piece The document that records and acknowledges the payment of an indebtedness secured by a mortgage.

saturant **1.** A substance, usually a diluted encapsulant, added to water to increase the amount of solute that can be dissolved at a certain temperature. A wetting agent used to improve penetration. **2.** A bituminous material with a low softening point, used for impregnating felt in asphalt-prepared roofing.

saturated air Air that contains the maximum amount of water vapor it can hold at its temperature and pressure.

saturated felt See asphalt-prepared roofing.

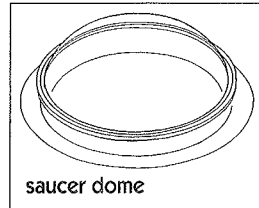
saturated surface dry Condition of an aggregate particle or other solid when the voids between the particles are filled with water and no water is on the exposed surfaces.

saturated vapor pressure The pressure at a given temperature in a closed container that contains a liquid and the vapor from that liquid, once equilibrium conditions have been reached.

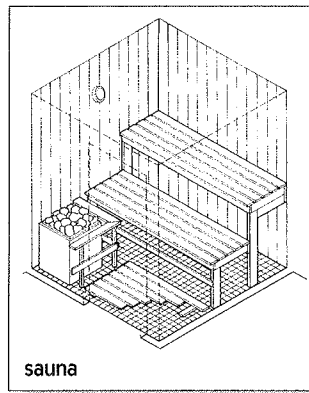
saturation line A line used on a cross-sectional drawing to indicate the ground water level.

saturation temperature The temperature at which vapor and liquid coexist in stable equilibrium.

saucer dome A dome that has a rise less than its radius.



sauna A room in which a person bathes in steam produced when water is sprayed or poured over heated rocks or another heated surface.



savings-to-investment ratio (SIR)

A dimensionless measure of performance that expresses the ratio of savings to costs, recommended for establishing priorities among projects. The numerator of the ratio contains the operation-related savings; the denominator contains the increase in investment-related costs.

saw **1.** To cut by means of a hand or powered tool having a thin, flat metal blade, band, or stiff plate with cutting teeth along the edge. **2.** A toothed steel device used to cut construction materials.

saw, band See band saw.

saw, chain See chain saw.

saw, circular See circular saw.

saw, drag See drag saw.

saw, gang See gang saw.

saw, miter See tenon saw.

saw, rock See rock saw.

saw, saber See saber saw.

saw, sash See sash saw.

saw, scroll See scroll saw.

saw, slasher See slasher saw.

saw, swing See swing saw.

saw, tenon See tenon saw.

saw, twin (double arbor saw) See twin saw.

saw bench A bench on which a circular saw is mounted.

sawbuck See sawhorse.

saw cut (control joint) A cut made in hardened concrete by diamond or silicone-carbide blades or discs.

sawdust concrete Concrete in which the aggregate consists mainly of sawdust from wood.

sawed finish Descriptive of the surface of any stone that has been sawn.

sawed joint A joint cut in hardened concrete by special equipment to less than the full depth of the member.

sawhorse (sawbuck) A four-legged bench, usually used in pairs, made primarily to hold wood while being sawed.

saw kerf A slot or kerf that is cut into wood with a saw.

sawmill A plant in which logs are converted to lumber by sawing.

sawn face See sawed finish.

sawn veneer Veneer that has been cut from a block with a saw, rather than peeled on a lathe or sliced off by a blade. Sawn veneer is sometimes said to be more solid than sliced or peeled veneer. Because of saw kerf waste, it is more costly to produce.

saw set **1.** The angle at which the teeth of a saw are set. **2.** A tool used to set the teeth of a saw at a desired angle.

saw table The table or platform of a power saw.

saw tex See **saw texture**.

saw texture A texture put on a piece of siding or paneling by a saw or knurled drum to give it a textured, rough, and/or resawn appearance.

saw-tooth roof (sawtooth roof) A roof with a profile similar to the teeth in a saw, composed of a series of single-pitch roofs, whose shorter or vertical side has windows for light and air. This roof shape is found primarily on industrial buildings.

sawyer In a sawmill, a worker who operates the head rig, or main saw, to make the initial cuts on a log. Also refers to a concrete saw operator.

Sawzall® See **reciprocating saw**.

scab **1.** A short piece of wood fastened to two formwork members to secure a butt joint. **2.** A slang term for a nonunion worker.

scabbing hammer See **scabbling hammer**.

scabble To dress stone with a pick, scabbling hammer, or broad chisel, leaving prominent tool marks so that a rough surface is left. Finer dressing usually follows.

scabbled rubble Rubble with only the roughest irregularities removed.

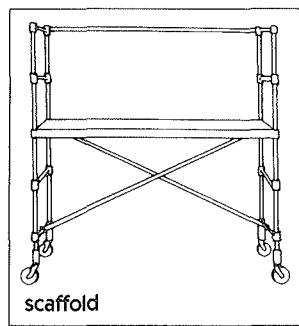
scabbling **1.** A chip or fragment of stone produced during rough dressing. **2.** Dressing down rough stone.

scabbling hammer (scabbing hammer) A hammer, used for rough dressing stone, with one end pointed for picking.



SCADA system See **supervisory control and data acquisition system**.

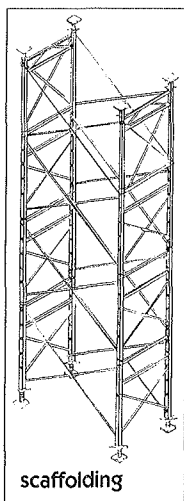
scaffold **1.** Any temporary, elevated platform and its supporting structure used for supporting workmen and/or materials. **2.** Any raised platform.



scaffold board A board used in forming a work platform on a scaffold.

scaffold height That height of a wall under construction that necessitates the addition of another section of scaffold so that construction of the wall can continue.

scaffolding A temporary structure for the support of deck forms, cartways, and/or workers, such as an elevated platform for supporting workers, tools, and materials. Adjustable metal scaffolding is frequently adapted for shoring in concrete work.



scagliola Plasterwork in imitation of ornamental marble, consisting of ground gypsum and glue colored with marble or granite dust.

scale **1.** A draftsman's tool with proportioned, graduated spaces.

2. A system of proportioned drawing in which lengths on a drawing represent larger or smaller lengths on a real object or surface. **3.** The flaky material resulting from corrosion of metals, especially iron or steel. **4.** A heavy oxide coating on copper or copper alloys resulting from exposure to high temperatures and an oxidizer. **5.** Any device for measuring weight.

scale drawing A drawing in which all dimensions are reduced proportionately according to a predetermined scale.

scalewood Hardwood veneer plywood used for a variety of purposes, such as in home construction, subflooring, and millwork.

scaling Local flaking or peeling away of the near-surface portion of hardened concrete or mortar, or of a layer from metal. See also **peeling and mill scale**.

scaling, light Does not expose coarse aggregate.

scaling, medium Involves loss of surface mortar to 5 to 10 mm in depth and exposure of coarse aggregate.

scaling, severe Involves loss of surface mortar to 5 to 10 mm in depth with some loss of mortar surrounding aggregate particles 10 to 20 mm in depth.

scaling, very severe Involves loss of coarse aggregate particles, as well as mortar, generally to a depth greater than 20 mm.

scaling hammer A hand or power hammer used in a chiseling fashion in masonry work.

scallop One of a series of segments of a circle, used in decorative patterns.

scalper A sieve for removing oversized particles.

scalping

S

scalping The removal of particles larger than a specified size by sieving.

scalp rock The waste material from a rock-grading operation.

scant Less than standard or required size.

scantling **1.** A small piece of lumber, ordinarily yard lumber, 2" thick and less than 8" wide, or lumber not more than 5" square. **2.** The dimensions, especially width and thickness, of construction materials such as stone or timber. **3.** A stud or similar upright framing timber. **4.** Any hardwood that has been squared, but is not of standard dimensions.

scarcement A ledged setback in a wall or bank of earth.

scarf The end of one of the pieces of a scarf joint.

scarf connection A connection made by precasting, beveling, halving, or notching two pieces to fit together. After overlapping, the pieces are secured by bolts or other means.

scarf joint A joint made by chamfering, or beveling, the ends of two pieces of lumber or plywood to be joined. The angled cut on each is made to correspond to the other so that the surfaces of the two pieces being joined are flush. *See also* **scarf connection**.

scarifier **1.** An attachment on a machine, having a series of long teeth that are used to tear up a pavement. **2.** A plastering tool with long, wire-like teeth, used to scratch a plaster coat to form a surface for another coat.

scarify **1.** To break up or scratch a surface such as earth or pavement. **2.** To roughen a surface by sanding or other means to improve adhesion of paint.

scarp A steep slope, natural or man-made.

SC asphalt Slow-curing asphalt.

scene control Lighting designed for specific purposes within a space.

schedule A chronological itemization, often in chart form, of the sequence of project tasks. *See also* **progress schedule**.

schedule contingency **1.** Duration added to a schedule activity to allow for the probability of possible or unforeseen events. Use in this manner is not recommended as the contingency is hidden and may be misused. **2.** A unique activity used to model specific float available to a project phase. Used in this manner gives ownership of float to those activities and or responsibility entity.*

schedule number Schedule numbers are American Standards Association designations for classifying the strength of pipe. Schedule 40 is the most common form of steel pipe used in the mechanical trades.

schedule of values (cost breakdown) A listing of elements, systems, items, or other subdivisions of the work, establishing a value for each, the total of which equals the contract sum. The schedule of values is used for establishing the cash flow of a project.

schematic design documents Documents and drawings that illustrate the relationship and scale of the components of the project.

schematic design phase (schematic drawing) The phase of design services in which the design professional consults with an owner to clarify the project requirements. The design professional prepares schematic design studies with drawings and other documents illustrating the scale and relationship of the project's components to the owner. A statement of estimated construction cost is often submitted at this phase.

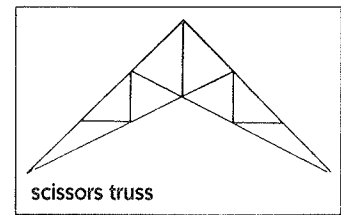
schist A metamorphic rock, the constituent minerals of which have assumed roughly parallel beds, used principally for flagging.

Schmidt hammer An instrument used to measure the compressive strength of

concrete. Testing involves gauging the distance of the hammer's rebound after it strikes the material.

scissor lift An electric or gas-powered platform mounted on folding arms and used to provide elevated work areas or to raise or lower unit loads.

scissors truss A roof truss with tension members extending from the foot of each principal rafter to the upper half of its opposite member.



sconce A bracket for a candlelight or a similar electric fixture, placed on a wall.

scope The sum of all that is to be or has been invested in and delivered by the performance of an activity or project. In project planning, the scope is usually documented (i.e., the scope document), but it may be verbally or otherwise communicated and relied upon. Generally limited to that which is agreed to by the stakeholders in an activity or project (i.e., if not agreed to, it is "out of scope"). In contracting and procurement practice, includes all that an enterprise is contractually committed to perform or deliver.*

scope creep Gradual progressive change (usually additions to) of the project's scope such that it is not noticed by project management team or customer. Typically occurs when the customer identifies additional, sometimes minor, requirements that, when added together, may collectively result in a significant scope change, resulting in cost and schedule overruns.*

scope of work An accurate, detailed, and concise description of the work

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to be performed by the contractor, the owner, and third parties in a construction contract.

scoping A primary component process in response to a request for a JO proposal, which includes a site visit by the contractor's representative(s) and the owner's representative(s) to identify and document various site characteristics and job conditions that will be impacted by the project's design and/or owner's intent.

scoping drawings Contract drawings that are marked up to indicate for a contractor what is "in scope" for his scope of work and what is not.

score **1.** In concrete work, to modify the top surface of one pour, as by roughening, so as to improve the mechanical bond with the succeeding pour. **2.** To tool grooves in a freshly placed concrete surface to reduce cracking from shrinkage. **3.** To scratch or otherwise roughen a surface to enhance the bond of plaster, mortar, or stucco that will be applied to it. **4.** To groove, notch, or mark a surface for practical or decorative purposes.

scoria Vesicular volcanic ejecta of larger size, usually of basic core position and characterized by dark color. The material is relatively heavy and partly glassy, partly crystalline. The vesicles do not generally interconnect. *See also aggregate, lightweight.*

S corporation A corporation that has elected to be taxed like a partnership, in accordance with the provisions of subchapter S of the Internal Revenue Code.

Scotch pine *Pinus sylvestris*. An imported European conifer widely used in reforestation.

scotia A deep, concave molding more than 1/4 round in section, especially as found in classical architecture at the base of a column.

Scots fir *See* Scotch pine.

Scots pine *See* Scotch pine.

scour **1.** Erosion of a concrete surface by water movement exposing the aggregate. **2.** Erosion of a river bottom by water movement.

scouring Smoothing freshly applied mortar or plaster by working it in circular motions with a cross-grained wooden float.

scragg mill An arrangement of four fixed saws used to break down logs or peeler cores of fairly uniform sizes. The scragg produces two slabs, two 2" cants, and a 4" cant in a single operation. These can then be reduced to 2x4s and 4x4s in a resaw.

scraper **1.** A digging, hauling, and grading machine having a cutting edge, carrying bowl, a movable front wall or apron, and a dumping or ejecting mechanism. **2.** A machine that is towed behind a vehicle to level the ground surface.

scraping Removal of a top layer of paint with a sharp instrument, such as a scalpel.

scrap out To remove debris from demolished gypsum wallboard.

scratch To score or groove a coat of plaster to provide a better bonding surface for a successive coat.

scratch awl An awl used for scribing surfaces of wood, plastic, etc.

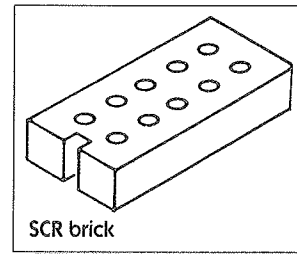
scratch-brushed finish (satin finish) A surface finish rendered by mechanical wire brushing or abrasive buffing.

scratch coat The first coat of plaster or stucco applied to a surface in three-coat work and usually cross-raked or scratched to form a mechanical key with the brown coat.

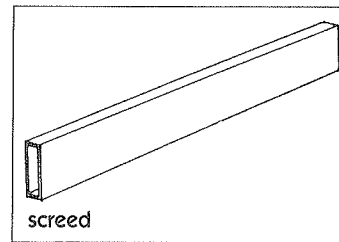
scratch tool Any hand tool for scratching a plaster surface to increase bonding of the successive coat, such as a devil float, drag, or scarifier.

SCR brick A patented brick with nominal dimensions of 2-2/3" x 6" x

12", as designated or classified by the Structural Clay Research (trademark of the Structural Clay Products Institute). It will render three courses in 8" and will render a wall whose nominal thickness is 8".



screed **1.** To strike off concrete lying above the desired plane or shape. **2.** A tool for striking off the concrete surface, sometimes referred to as a strike off.



screed coat The plaster coat made flush with the screeds.

screed guide Firmly established grade strips or side forms for unformed concrete that will guide the strike off in producing the desired plane or shape.

screeding The operation of forming a surface by the use of screed guides and a strike off. *See also strike off.*

screed rail Grade strips or side forms for concrete that will also guide the strike off in screeding.

screed strip One of a series of long narrow strips of plaster, carefully leveled to serve as guides for the application of plaster to a specified thickness.

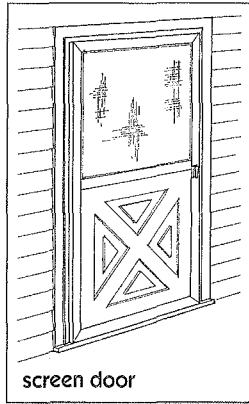
screen *See* sieve.

screen analysis *See* sieve analysis.

screen door

S

screen door A lightweight exterior door, with a wood or aluminum frame and small mesh screening in place of panels, which permits ventilation but bars insects.



screen-door latch A light locking or latching device for use on screen doors and operated by a knob, a lever handle, or a handle and push button.

screen façade An architectural facing used to disguise the shape or size of a building.

screenings That portion of granular material that is retained on a sieve.

screen mold A molding, originally used in the construction of screens and now used extensively in cabinetry and finished carpentry, where a clear strip is required, as on the edge of a shelf made of plywood or particleboard.

screw A fastener with an external thread.

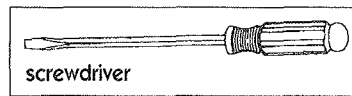
screw anchor A type of molly whose metal, plastic, or fiber shell is inserted into a hole in masonry, plaster, or concrete, and expanded when the screw is driven in.

screw clamp A woodworking tool consisting of a pair of opposing jaws that can hold pieces of wood and are adjusted by two screws.

screw conveyor A helical screw shaft turning on the concentric axis of a pipe. Conveys fine-grained or liquid material.

screw dowel A dowel pin with a straight or tapered thread.

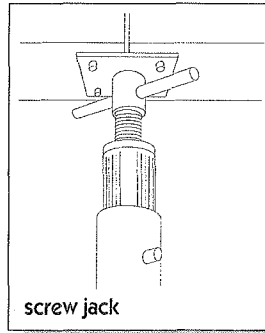
screwdriver A hand tool with the shanks tip shaped to fit the recess in the head of a screw; used to drive or remove the screw.



screwed joint A pipe joint consisting of threaded male and female parts joined together.

screw eye A screw with a loop or eye for its head.

screw jack See jackscrew.



screwless knob A doorknob that is attached to the spindle using a special wrench, rather than the more common side screw.

screwless rose A rose with a concealed method of attachment.

screwnail See drivescrew.

scribe To mark and cut the edge of a member for an irregular cut that will allow it to fit a similarly irregular space.

scribed joint See coped joint.

scraper A pointed tool used to mark guidelines on wood, metal, and plastic.

scrim A coarse, meshed material, such as wire, cloth, or fiberglass, that spans and reinforces a joint over which plaster will be applied.

scroll compressor A rotary positive displacement compressor with a fixed and a rotating scroll, in which compression takes place by confining gas volume by the meshing of the scrolls.

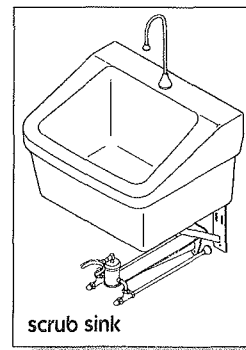
scroll molding An ornamental molding, semicircle in cross section, with a slight overhang on the rounded surface that faces outward.

scroll saw A handsaw consisting of a thin blade in a deep U-shaped frame and a handle. A scroll saw is used for cutting thin boards, veneers or plates, and is especially good for cutting curves.

scrubboard See baseboard.

scrub plane A wood plane having a blade with a convex cutting edge, used in rough carpentry work.

scrub sink A plumbing fixture equipped to enable medical personnel to scrub their hands prior to a surgical procedure. The hot and cold water supply is activated by a knee-action mixing valve or by wrist or foot control.



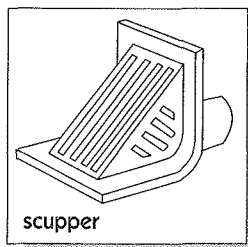
scuba A self-contained underwater breathing apparatus utilizing an air tank connected directly to a respirator face mask.

scum 1. A deposit, sometimes formed on the surface of clay bricks, caused by soluble salts in the clay that accumulate on the surface during drying, or by the formation of deposits

during kiln firing. **2.** A mass of organic matter that floats on the surface of sewage. **3.** A film of impure matter that forms on the surface of a body of water.

scumbling The process of lightly rubbing a paintbrush containing a small amount of opaque or semi-opaque color over a surface to soften and blend bright tints, or to produce a special effect. The deposited coat may be so thin as to seem semitransparent.

scupper Any opening in a wall, parapet, bridge curb, or slab that provides an outlet through which excess water can drain.



“S” curve A rudimentary method of illustrating the progress of billings as a function of time as measured against the schedule.

scutch (scotch) A tool used by bricklayers to cut, trim, and dress masonry units.

scutching Dressing stone with a special hammer whose head contains several steel points.

scuttle See **roof hatch**.

s-dry A description of lumber seasoned to a moisture content of 19% or less prior to surfacing.

seal A legal term used to describe the signature or other representation of an individual agreeing to the terms and conditions of an agreement or contract.

sealant See **joint sealant, membrane curing and encapsulant**.

seal coat See **sealer**.

sealed bearing A conventional bearing that has been provided with seals on its

sides so that the bearing can be used for longer periods without greasing.

sealed bid A bid, based on contract documents, that is submitted sealed for opening at a designated time and place.

sealed bidding A basic method of procurement that involves the solicitation of bids and the award of a contract to the responsible bidder submitting the lowest responsive bid. This type of bidding is commonly used on public works projects.

sealed double glass See **insulating glass**.

sealer **1.** Any liquid applied to the surface of wood, paper, or plaster to prevent it from absorbing moisture, paint, or varnish. **2.** A liquid coating applied over bitumen or creosote to restrict it from bleeding through other paints. **3.** A final application of asphalt or concrete to protect against moisture. **4.** Any liquid coating used to seal the pores of the surface to which it is applied.

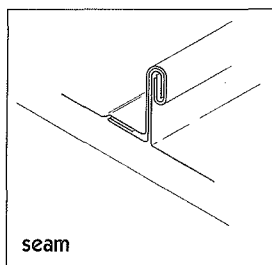
sealing compound See **joint sealant and membrane curing**.

sealing joints Filling pavement joints with a flexible material.

seal slab A concrete slab placed along the bottom of a trench to stabilize bedding material.

seal weld A weld used primarily to seal a joint against leakage.

seam A joint between two sheets of material, such as metal.



seamer A hand tool used in the making of seams in sheet metal.

seaming The process of joining metal sheets by bending over or doubling the edges and pinching them together.

seamless door **1.** A hollow-metal door having no visible seams on its faces. **2.** A door constructed from sheet-steel bonded to a solid, structural mineral core so as not to have any edge seams.

seamless flooring Fluid- or trowel-applied floor surfaces that do not contain aggregates.

seamless pipe An extruded seamless tube having certain standardized sizes of outside diameter and wall thickness, commonly designated by nominal pipe sizes and American National Standards Institute's schedule numbers.

seamless tubing Tubing manufactured with no visible seams.

seam weld A resistance weld made in overlapping parts.

seasonal commodities

Commodities which are normally available in the market-place only in a given season of the year.*

seasonal energy efficiency ratio (SEER) A measure of cooling efficiency for air conditioning products. The higher the SEER rating, the more energy efficient the unit. The government's established minimum rating for air conditioning is 10.

season crack A crack occurring in metals that have undergone rolling or some other process that causes internal stress.

seasoned **1.** Timber that is not green, having a moisture content of 19% or less, and is air- or kiln-dried. **2.** Cured or hardened concrete.

seasoning **1.** The process by which lumber is dried, either by air or in a kiln. **2.** The curing or hardening process that occurs in concrete.

seasoning check A small split that occurs in the grain of wood when moisture is extracted too rapidly.

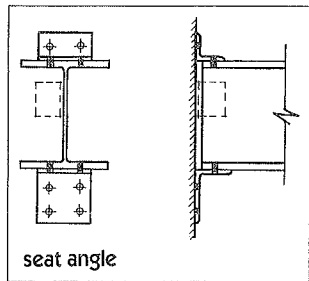
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seat

S

seat 1. The cut made at the lower end of a rafter that enables it to fit securely over the top wall plate. **2.** See **valve seat**.

seat angle A short leg on a steel angle fastened to a column or girder to support the end of a beam.



seat cut The shaped cut in the end of a rafter where it rests on, and is connected to, a plate or beam.

seating pressure The pressure generated by the action of a spring and control air to close the automatic control valve plug against its seat.

sebrogation See **subrogation**.

secant modulus See **modulus of elasticity**.

second 1. A piece of secondary quality or one not meeting specified dimensions. **2.** A unit measure of time.

secondary air 1. Air that is introduced into a burner above or around the flames to promote combustion, in addition to the primary air that is premixed with the fuel or forced as a blast under a stoker. **2.** Air already in an air-conditioned space, in contrast to primary air that is supplied to the space.

secondary beam A flexural member that is not a portion of the principal structural frame of a building.

secondary blasting Blasting used to reduce the dimensions of oversized material to render it suitable for handling.

secondary branch In the plumbing of a building drain or water-supply main, any branch that is not the primary branch.

secondary combustion The burning of combustible gases and smoke that are not burned during primary combustion. Such combustion can be either by design to create added energy or an unintentional, undesirable event.

secondary consolidation (secondary compression, secondary time effect) The reduction in volume of a soil mass caused by the application of a sustained load to the mass and due principally to the adjustment of the internal structure of the soil mass after most of the load has been transferred from the soil water to the soil solids.

secondary containment A chamber for the collection of oil that has leaked from a fuel oil tank.

secondary crusher An aggregate crusher used for the second stage in a process of size reduction. See also **primary crusher**.

secondary feeder Any electrical conductor that runs from a building's service entrance to one of its distribution centers.

secondary financing A loan secured by a second mortgage on a piece of property.

secondary light source A light source that is not itself a luminaire or otherwise intrinsically light-producing or light-emitting, but which, instead, receives light from another source and simply serves to redirect it, as by reflection or transmission.

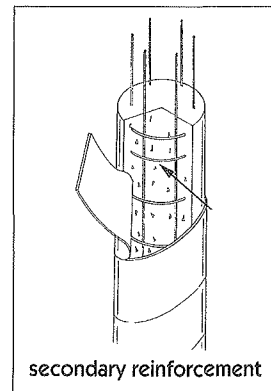
secondary member A structural member that carries a load to a primary member. Examples include purlins, headers and jambs. See also **primary member**.

secondary moment In statically indeterminate structures, the additional moments caused by deformation of the structure due to the applied forces. In statically indeterminate prestressed concrete structures, the additional

moments caused by the use of a nonconcordant prestressing tendon.

secondary nuclear vessel Exterior container or safety container in a nuclear reactor subjected to a design load only once in its lifetime, if at all.

secondary reinforcement Reinforcing steel in reinforced concrete, such as stirrups, ties, or temperature steel. Secondary steel is any steel reinforcement other than main reinforcement.



secondary sheave A supplementary sheave or block used to enable double wrapping of hoisting ropes and increase traction and/or lifting power.

secondary subcontractor A subcontractor employed by the contractor to complete minor portions of the work, or a subcontractor other than those identified as primary subcontractors.

secondary winding The winding on the output side of a transformer.

second coat The second coat of plaster, which is the brown coat in three-coat work or the finish coat in two-coat work.

second-growth timber Wood from trees grown after a virgin forest has been cut down.

seconds A grade of lumber used in the hardwood industry and sometimes in the overseas trade, as in firsts and seconds.

secret dovetail (miter dovetail) A joint whose external appearance implies a simple miter joint, but having dovetailing concealed within it.

secret gutter A concealed gutter.

secret nailing See **blind nailing**.

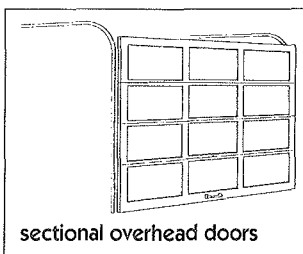
section 1. A topographical measure of land area, equal to one mile square or 640 acres. One of the 36 divisions in a township. **2.** The most desired pieces of veneer, clipped to standard widths of 54" and 27", because of the ease of using them in assembling a panel. The actual width may vary from 48"-54", or 24"-27". **3.** A drawing of an object or construction member cut through to show the interior makeup. **4.** A segment of the project specifications that cover a work item.

Section 1245 property According to IRS tax code, all tangible property other than land and permanent improvements to the land. Includes buildings and their structural components, as well as assets that can be shown to be an accessory to the operation of the business or trade.

Section 1250 property According to IRS tax code, all tangible property that is not classified as Section 1250 property, including land and improvements to the land.

sectional insulation Insulation that is manufactured to be assembled in the field, such as pipe insulation molded in two parts to fit around a pipe in the field.

sectional overhead doors Doors made of horizontally hinged panels that roll into an overhead position on tracks, usually spring-assisted.



sectional valve In a piping system, a control valve that is used to isolate a section for repair or other reason.

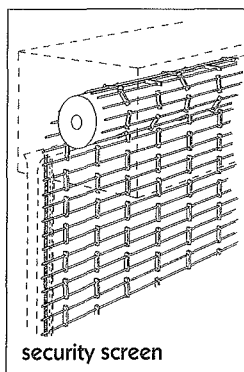
section modulus A term pertaining to the cross section of a flexural member. The section modulus with respect to either principal axis is the moment of inertia with respect to that axis divided by the distance from that axis to the most remote point of the tension or compression area of the section, as required. The section modulus is used to determine the flexural stress in a beam.

sectorwood A method of wood processing, patented by Weyerhaeuser Company, in which round logs are first quartered and then cut into pie-shaped pieces called sectors. These pieces are then glued together to form wood 2" thick and up to 3'-4' in width. This wood can then be ripped to the desired widths. The process is designed to greatly increase the yield from small logs.

security glass See **bullet-resisting glass** and **laminated glass**.

Security Industry Association (SIA) A nonprofit international trade association representing electronic and physical security product manufacturers, specifiers, and service providers.

security screen A heavy screen in a special frame used as a barrier against escapes or break-ins. See also **protection screen**.



security screw A screw with a tamper-proof head design.

security system A system that monitors and may also document aspects of access control, various types of alarms, perimeter security, and closed circuit TV and video surveillance.

security window A steel window used in stores, warehouses, and similar commercial buildings to provide protection against burglary.

sediment (silt) Material that settles to the bottom of a liquid.

sedimentary rock Rock such as limestone or sandstone that is formed from deposits of sediment consolidated by cementitious material and/or the weight of overlying layers of sediment.

sediment basin A dug-out or depressed area used for retention of debris or sediment on a construction site.

seedy Descriptive of a rough finish on paint caused by a dirty brush or by undispersed particles of pigment or insoluble gel particles in the paint.

seepage 1. The slow percolation of water through a soil. **2.** The quantity of water that has moved slowly through a porous material.

seepage bed A trench at least a yard wide into which coarse aggregate and a system of distribution pipes are placed so as to allow the treated sewage that passes through them to seep into the surrounding soil.

seepage force The force that is transferred to soil particles by seepage.

segmental arch An arch where the curve through the length of the arch is less than a semicircle.

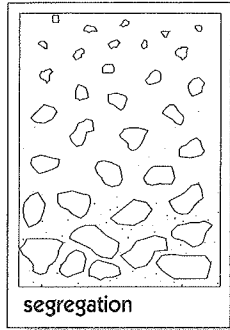
segmental member A structural member made up of individual elements prestressed together to act as a monolithic unit under service loads.

segment saw A large-diameter circular saw consisting of pie-shaped sections and whose narrow kerf makes it especially suitable for cutting veneer.

segregation

S

segregation The differential concentration of the components of mixed concrete, aggregate, or the like, resulting in nonuniform proportions in the mass. *See also* separation.



seismic bracing Structural reinforcement that is designed to protect against wind and earthquake.

seismic code A building code pertaining to earthquakes and other seismic activity that governs structural design and defines the requirements of preventive measures.

seismic design Construction designed to withstand earthquake force.

seismic load (earthquake load)

The assumed lateral load an earthquake might cause to act upon a structural system in any horizontal direction.

seismic sensor A device that detects vibrations.

seizing 1. Friction damage to a metal surface by another metal surface.

2. Restriction or prevention of motion of a metal component caused by fusion or coherence with another component.

select A high-quality piece of lumber graded for appearance. Select lumber is used in interior and exterior trim, and cabinetry. It is most often sold S4S in a 4/4 thickness, but may also be produced S2S in a variety of thicknesses.

selected bidder The bidder selected by the owner to consider the award of a construction contract.

selected list of bidders *See* invited bidders.

selective bidding A process of competitive bidding for award of the contract for construction whereby the owner selects the constructors who are invited to bid to the exclusion of others, as in the process of open bidding.

selective digging Separating two or more types of soil while excavating, such as loam from sandy soil.

selective glazing Window material, such as glass, that screens out the infrared and ultraviolet portions of the solar spectrum, but allows visible light to pass. Selective glazing is recommended if a clear appearance is desired, or if a high visible transmittance is required to meet daylighting goals.

selective surface A blackened metal foil that has a high absorptivity in the short wavelength solar spectrum, but a low emissivity in the long wavelength infrared spectrum, thus reducing radiant heat loss off the surface. Used in Trombe walls for passive solar heating or in solar collectors to heat water.

select material Excavated pervious soil suitable for use as a foundation for a granular base course of a road, or for bedding around pipes.

select merchantable 1. A grade of boards intended for use where knotty-type lumber of fine appearance is required.
2. An export grade of sound wood with tight knots and close grain, suitable for high-quality construction and remanufacture.

select structural The highest grade of structural joists and planks. This grade is applied to lumber of high quality in terms of appearance, strength, and stiffness.

select tight knot (STK) A grade term frequently used for cedar lumber. Lumber designated STK is selected from mill run for the tight knots in

each piece, as differentiated from lumber that may contain loose knots or knotholes.

selenite Gypsum in a transparent, foliated, crystalline state, usually used as ornamental building stone.

selenitic cement (selenitic lime)

A type of lime cement that has had its hardening properties improved by the addition of 5% to 10% plaster of Paris.

self-ballasted lamp An arc-discharge lamp with a special built-in filament coil that controls both starting and operating currents.

self-centering lath Expanded-metal rib lath used as lathing in solid plaster or pneumatic-placed concrete partitions and walls, or as formwork for concrete slabs.

self-closing device *See* closing device.

self-closing fire door A fire door equipped with a closing device.

self-contained air-conditioning
See packaged air-conditioner.

self-contained breathing apparatus (SCBA) Personal protective equipment consisting of a mask and air supply that is used where there is a threat of toxic fumes or an oxygen-deficient atmosphere.

self-desiccation The removal of free water by chemical reaction so as to leave insufficient water to cover the solid surfaces and to cause a decrease in the relative humidity of the system. The term is applied to an effect occurring in sealed concretes, mortars, and pastes.

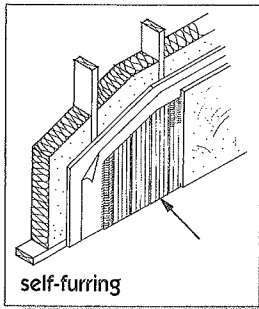
self-drilling screw A fastener that does not require a predrilled hole.

self-faced stone An undressed stone such as a flagstone.

self-finished roofing felt *See* asphalt-prepared roofing.

self-furring Metal lath or welded-wire fabric formed in the manufacturing process to include means by which

the material is held away from the supporting surface, thus creating a space for *keying* of the insulating concrete, plaster, or stucco.



self-furring nail A nail with a flat head and a washer or spacer in the shank, used for fastening reinforcing wire mesh and spacing it from the nailing member.

self-healing A redundancy in a system or a network (such as a backup power supply) that allows operations to continue in the event of failures in certain components.

self-ignition temperature The minimum temperature at which a material will self ignite with no external flame source.

self-leveling sealant A sealant, such as one used on concrete joints or cracks, with properties such that the simple force of gravity will level it.

self-reading leveling rod A leveling rod designed so that the instrument man sights on a target and the rodman takes the reading off the rod.

self-sealing paint A type of paint that can be applied over a surface of inconsistent porosity to seal it and still dry to a uniform color and sheen.

self-sealing shingles Shingles that come with factory-applied spots or strips of adhesive.

self-spacing tile Ceramic tile with protuberances on the sides that space the tiles for grout joints.

self-stressing concrete (chemically prestressed concrete)

Expansive-cement concrete (mortar or grout) in which expansion, if restrained, induces persistent compressive stresses in the concrete.

self-supporting wall A non-load-bearing wall.

self-tapping screw A screw designed to cut its own threads in a predrilled hole.

self-test An automatic diagnostic procedure.

seller's market A condition in which demand for goods is greater than supply, thereby giving sellers the upper hand in negotiations.

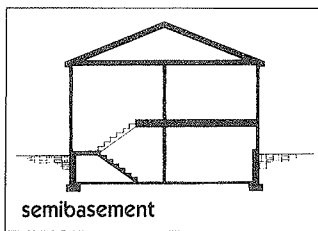
selvage (selvedge) **1.** An edge or edging that differs from the main part of a fabric or granule-surfaced roll roofing. **2.** The finished lengthwise edge of woven carpet that will not unravel or require binding.

selvage joint In roofing, a lapped joint mortised with mineral-surfaced cap sheets. A small part of the longitudinal edge of the sheet below contains no mineral surfacing so as to improve the bond between the lapped top sheet surface and the bituminous adhesive.

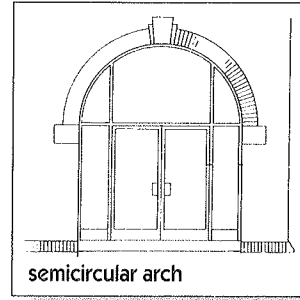
semiautomatic arc welding Arc welding with equipment that feeds the filler metal at a preset rate. The advance of the welding is controlled manually.

semiautomatic batcher See batch mixer.

semibase A basement that is only partly below ground level.



semicircular arch A round arch whose intrados is a complete semicircle.

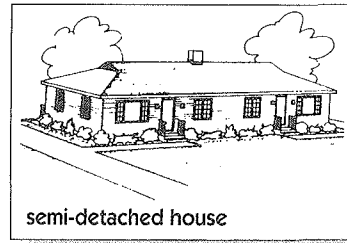


semicircular dome A dome constructed in the shape of a half-sphere.

semiconductor **1.** An electric conducting material, with resistivity in the range between metals and insulators, such as germanium or silicon. **2.** Miniature electric devices manufactured from semiconductor materials.

semi-detached dwelling One of a pair of dwellings with a party wall between them.

semi-detached house One of a pair of houses with a party wall between them.



semi-direct lighting Lighting from luminaires that direct 60° to 90° of the emitted light downward and the balance upward.

semi-dome A half-dome equal to 1/4 of a hollow sphere, as might be found above a semicircular niche or apse.

semi-engineering brick Brick whose crushing strength is somewhere between that of building brick and engineering brick.

semi-flexible joint

S

semi-flexible joint In reinforced concrete construction, a connection in which the reinforcement is arranged to permit some rotation of the joint.

semi-gloss **1.** The degree of surface reflectance midway between glass and eggshell. **2.** Paints and coatings displaying these properties.

semi-housed stair A stair that has a wall on one side only.

semi-hydraulic lime A type of lime categorized intermediately between high-calcium lime and eminently hydraulic limes. When run to putty it is almost as workable as nonhydraulic lime, even though its hydraulic characteristics can be substantially reduced by soaking in water for several hours.

semi-indirect lighting Lighting from luminaires that direct 60° to 90° of their emitted light upward and the balance downward.

semi-rigid frame A type of structural framework construction in which some flexibility is allowed at the joints of columns and beams.

semi-split A trade name used by the Red Cedar Shingle and Handsplit Shake Bureau for a product with a partially sawn and split face.

semi-steel Low-carbon cast iron produced by adding steel scrap to molten pig iron.

semi-trailer A trailer that has a set or sets of wheels at the rear only. The front part is supported on a towing vehicle.

sensible heat Heat that alters the temperature of a material without causing a change in state in that material.

sensitizer A substance that causes a person to become susceptible to the adverse health effects of the same or different substance to which he/she had previously not been susceptible.

sensor A device designed to detect an abnormal ambient condition, such as smoke or high temperature, and to sound an alarm or operate a device.

separate-application adhesive An adhesive consisting of two parts, each part being applied to a different surface. The surfaces are brought together to form a joint.

separate contract A prime contract that is one of several on a project. Distinguished from a subcontract.

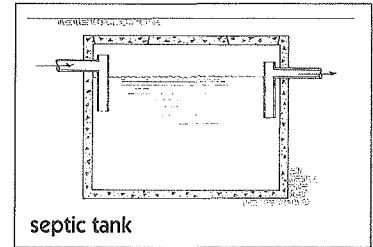
separate contractor A contractor who has a direct contract with the owner. *See also separate contract.*

separated aggregate **1.** A quantity of aggregate that has been separated into two or more batches based on size. **2.** Fine and coarse aggregate considered separately before mixing.

separation **1.** The tendency of coarse aggregate to separate from the concrete and accumulate at one side as concrete passes from the unconfined ends of chutes, conveyor belts, or similar arrangements. **2.** The tendency of the larger aggregate to separate from the mass and accumulate at one side as processed aggregate leaves the ends of conveyor belts, chutes, or similar devices with confining sides. **3.** The tendency of the solids to separate from the water by gravitational settlement. *See also bleeding and segregation.*

septic system A wastewater treatment system installed at the site of a home. Systems typically include a septic tank in which waste is biologically processed and a drain field that allows remaining liquids to be absorbed by the soil.

septic tank A watertight receptacle that receives the discharge from a sewage system, or part thereof. They are constructed to separate solids from the liquid, digesting organic matter during a period of detention, and discharging the clarified liquids.



sequence of operations An accounting of a system's procedures for start-up and shut-down, response to varying conditions, and certain scheduled operations.

sequence-stressing loss In posttensioning, the elastic loss in a stressed tendon resulting from the shortening of the member when additional tendons are stressed.

serial configuration *See series wiring.*

serial digital alarm communicator transmitter A transmitter that accepts output from devices such as a fire alarm control.

serial distribution A group of absorption trenches, seepage pits, or seepage beds arranged in a series so total effective absorption area of one is used before flow enters the next.

sericite A white clay material used in masonry as a filler in grouting cement. Also used as a paint extender.

series circuit A circuit supplying electrical energy to a number of devices connected so that the same current passes through each device.

series wiring A wiring configuration in which electrical current travels along one conductor or wire. Unlike parallel wiring, series wiring is seldom used.

serpentine Rock largely composed of hydrous magnesium silicate and commonly occurring in greenish shades. It forms the main constituent in some marbles.

serpentine wall Garden wall that follows a curved ogee path resembling a serpent.

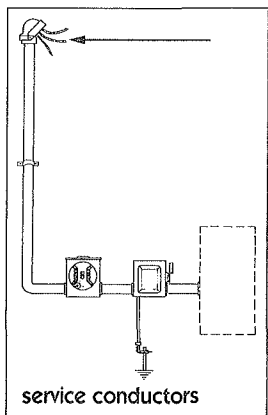
server room A space (often designed with additional/backup power and cooling supply and protective systems) that houses computer servers and communications equipment.

service The conducting equipment used to deliver electricity from the supply system to the wiring system of a building.

service box Within a building, a metal box located at the point where the electric service conductors enter the building.

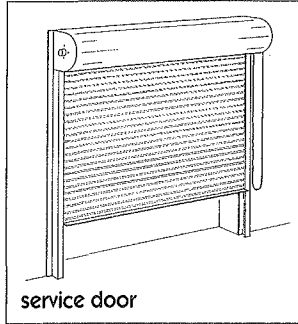
service cable Cable composed of service conductors.

service conductors Those conductors (wires) that carry electrical current from the street mains, or transformers, to the service equipment of the building being supplied.



service dead load The dead weight supported by a member.

service door (service entrance) An exterior door in a building, intended primarily for deliveries, for removal of waste, or for the use of service personnel.



service drop The overhead conductors that connect the electrical supply or communication line to the building being served.

service elevator An elevator intended for combined passenger and freight use.

service ell (street ell) A fitting for threaded pipe with a 45° or 90° bend, a male thread on one end, and a female thread on the other.

service entrance The location where an electrical supply line enters a building.

service entrance switch The circuit breaker or switch, with fuses and accessories, located near the point of entrance of supply conductors to a building and intended to be the main control and cut-off for the electrical supply to that building.

service equipment The equipment located at the point of entry of supply conductors to a building intended to control and, if necessary, cut off the electrical supply to that building. Consists of a circuit breaker or switch and fuses.

service lateral Those underground electrical service conductors (wires) between the street main, including any risers at a pole or other structure or from transformers, and the point of initial connection with the service entrance conductors in a terminal box or other enclosure either inside or outside a wall of the building being served. In the absence of such a box or enclosure, the service lateral connects

the street main and the point at which the service conductors enter into the building.

service lead The electrical supply line running from a utility pole that delivers power to a customer service panel.

service level agreement A contract that specifies terms of performance that one entity will provide to another. The agreement may include standards for a system's availability and reliability.

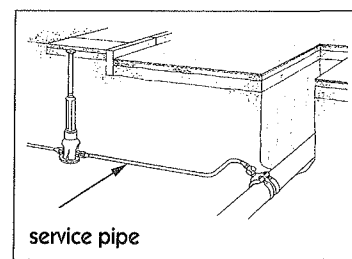
service live load The live load specified by the general building code or bridge specification, or the actual nonpermanent load applied in service.

service load See service dead load and service live load.

service panel The main circuit breaker panel or fuse box where the service lead ties into the building's circuits.

service period In lighting, the number of hours per day that natural daylight provides a specified amount of illumination, often expressed as a monthly average.

service pipe 1. The water or gas pipe that leads from a supply source, usually public distribution mains in the street, to the particular building(s) being served. 2. The pipe or conduit through which underground service conductors are run from the outside supply wires to the customer's property.



service refrigerator Any refrigerated display case or reach-in refrigerator from which an attendant serves a customer.

service road

S

service road **1.** A lesser road parallel to the main road, used primarily by local traffic. **2.** A road or drive in a complex that is intended for vehicles making deliveries or collecting waste.

service systems The heating, ventilating, air-conditioning, water, and electric distribution systems in a building.

service tee A tee fitting used for threaded pipe and having one end threaded on the outside, and the other end and the branch threaded on the inside.

service temperature The highest temperature at which a material can be used without compromising its strength or other properties.

service valve In a piping system, any valve that isolates a device or apparatus from the rest of the system.

set **1.** The condition reached by a cement paste, mortar, or concrete when it has lost plasticity to an arbitrary degree usually measured in terms of resistance to penetration or deformation. Initial set refers to first stiffening; final set refers to attainment of significant rigidity. *See also permanent set.* **2.** The rehydration and consequential hardening of gypsum plaster. **3.** The strain that remains in a member after the removal of the load that initially produced the deformation. **4.** To transform a resin or adhesive from its initial liquid or plastic state to a hardened state by physical or chemical action, such as condensation, polymerization, oxidation, vulcanization, gelation, hydration, or the evaporation of volatile ingredients. **5.** To drive a nail so far that its head is below the surface into which it has been driven. **6.** To apply a finish coat of plaster. **7.** The permanent distortion produced in a spring that has been stressed beyond the elastic limit of its constituent material. **8.** The overhang given to the points of sawteeth resulting in a kerf slightly wider than the saw to facilitate sawing motion.

setback The minimum distance required by code or ordinance between a building and a property line or other reference.

setback buttress A buttress set slightly back from the angle or corner of a building.

setback thermostat Programmable thermostat that can be set to different temperatures at different times of the day or week.

set point The desired value of the controlled variable (i.e., temperature, pressure).

setscrew **1.** An often headless screw used to secure two separate parts in a position relative to each other, preventing the independent motion of either part. **2.** A screw used to adjust the tension of a spring.

setting bed The mortar subsurface to which *terrazzo* is applied.

setting block In glazing, a small block of wood, lead, neoprene, or other suitable material placed under the bottom edge of a light or panel to support it within the frame and prevent it from settling down onto the lower rabbet or channel.

setting shrinkage A reduction in volume of concrete prior to the final set of cement, caused by settling of the solids and by the decrease in volume due to the chemical combination of water with cement.

setting space The distance between the finished face of a veneer, such as a brick panel, and the outside of the main wall.

setting stuff The last coat applied to a wall containing lime putty, little aggregate, and no fiber, giving the wall a smooth white finish. Also referred to as "finish plaster."

setting temperature The temperature to which an adhesive or resin must be subjected in order for setting to occur.

setting time *See initial setting time and final setting time.*

setting-up That point in the initial drying of a paint or other liquid coating at which it is no longer able to flow.

settlement **1.** Sinking of solid particles in grout, mortar, or fresh concrete, after placement and before initial set. *See also bleeding.* **2.** An agreement by which the parties consent to settle a dispute between them. **3.** The total amount of money that both the insurance company and the policyholder agree on to close the claim.

settling The lowering in elevation of sections of pavement or structures due to their mass, the loads imposed on them, or shrinkage or displacement of the support.

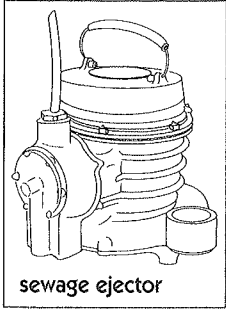
settling basin An enlargement or basin within a water conduit that provides for the settling of suspended matter, such as sand; and is usually equipped with some means of removing the accumulated material.

set up **1.** The stationing of a surveying instrument, such as a transit. **2.** Descriptive of concrete or similar firm material. **3.** In plumbing, to bend up the edge of a sheet of lead lining material. **4.** To caulk a pipe joint with lead by driving it in with a blunt chisel.

sewage Any liquid home waste containing animal or vegetable matter in suspension or solution. Sewage may include chemicals in solution; ground, surface, or storm water may be added as it is admitted to or passes through the sewers.

sewage disposal The treatment and dispersal of sewage.

sewage ejector A plumbing device used to raise sewage to a higher elevation.



sewage gas The mixture of gases, odors, and vapors, sometimes including poisonous and combustible gases, found in a sewer.

sewage treatment Any process to which sewage is subjected to remove or alter its objectionable constituents by reduction in the organic and bacterial content, rendering it less offensive and dangerous.

sewage treatment plant Structures and appurtenances that receive raw sewage and bring about a reduction in organic and bacterial content of the waste so as to render it less dangerous and less odorous.

sewer **1.** Generally, an underground conduit in which waste matter is carried in a liquid medium. **2.** A pipeline in which sewage is conveyed.

sewerage The entire works required to collect, treat, and dispose of sewage, including the sewer system, pumping stations, and treatment plant.

sewer appurtenances Manholes, sewer inlets, and other devices, constructions, or accessories related to a sewer system but exclusive of the actual pipe or conduit.

sewer brick Low absorption, abrasive-resistant brick intended for use in drainage structures.

sewer gas See sewage gas.

sewer lateral or side sewer Part of a sanitary sewer system that delivers the wastewater from a home to the main sewer lines.

sewer pipe The piping used in a sewer.

sewer plank Timbers, mostly in the sizes of 3" x 8" and 3" x 10" 18' and 20' lengths, that are used to repair or construct drainageways, especially in older cities.

sewer stub or sewer tap The point at which a home's sewer line joins the municipal sewer system.

sewer tile Impervious clay tile pipe intended to carry water or sewage.

sewer trap See building trap.

s-green A description of lumber surfaced while at a moisture content of more than 19%.

shack See shanty.

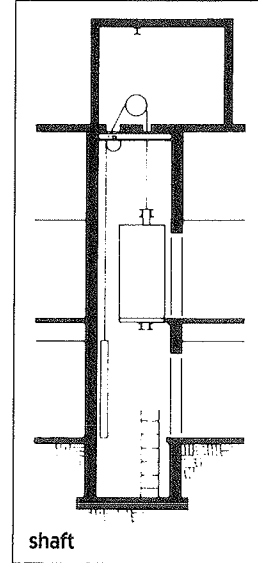
shade The degree to which a color is mixed with black to decrease illumination, or darken it.

shading coefficient The measure of the solar heat coming through the glass of a window. A low shading coefficient means reduced air conditioning expense. See also solar heat gain coefficient.

shadow construction Refers to orientating and building a structure with true sun angles in relation to north-south axis, azimuth, and altitude angle of the sun at a desired time.

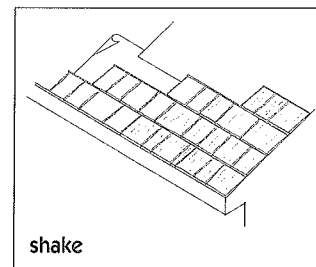
shadowing Placing a light in front of an object to project a shadow on the surface behind.

shaft **1.** That portion of a column between the base and the capital. **2.** An elevator well. **3.** A pit dug from the ground surface to a tunnel to furnish access and ventilation. **4.** Any enclosed vertical space in a building used for utilities or ventilation. **5.** Any cylindrical rod connecting moving parts in a machine.



shaft wall Fire-resistant wall that isolates elevators, stairwells and vertical mechanical chases in high-rise construction. This wall must withstand the fluctuating (positive and negative) air-pressure loads created by elevators or air distribution systems.

shake **1.** Roofing or sidewall material produced from wood, usually cedar, with at least one surface having a grain split face. **2.** A crack in lumber due to natural causes.



shale A laminated and fissile sedimentary rock, the constituent particles of which are principally clay and silt.

shallow trench system A drainage system that can be used for dispersal of gray water for irrigation.

shank

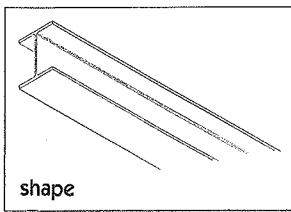
S

shank **1.** The main body of a nail, screw, bolt, or similar fastener extending between the head and the point. **2.** The usually metal part of a drill or other tool that connects the working head to the handle. **3.** In a Doric frieze, a plain space between channels of a triglyph.

shank hanger Device used to attach metal gutters to a structure by fastening to sheathing or rafters.

shanty A small wooden building, usually temporary and haphazardly constructed.

shape **1.** A solid section, other than flat product, rod, or wire sections, furnished in straight lengths and usually made by extrusion; but sometimes fabricated by drawing. **2.** A solid section other than regular rod, bar, plate, sheet, strip, or flat wire. It may be oval, half oval, half round, triangular, pentagonal, or of any special cross section furnished in straight lengths. **3.** A wrought product that is long in relation to the dimensions of its cross section, which is of a form other than that of sheet, plate, rod, bar, tube, or wire. **4.** To give a profile or detail to a piece of work, such as providing a board with a head or rounded edge. **5.** To work on a piece of wood or other material to make it conform to a predetermined desired or required pattern, or to render from its surface a specific texture or degree of smoothness.



shaper **1.** A woodworking machine with a vertically revolving cutter for cutting irregular outlines, moldings, etc., in wood placed on a table below the cutter. **2.** A metalworking machine similar to a planer, except that the

cutting tool is moved back and forth across the surface.

shaping machine See **shaper**.

shared tenant services

Telecommunications and other services that a building operator makes available to tenants.

sharp pencil A great effort to prepare a competitive bid through accuracy in estimating.

sharp sand Coarse sand made up of particles of angular shape.

shatterproof glass See **laminated glass**.

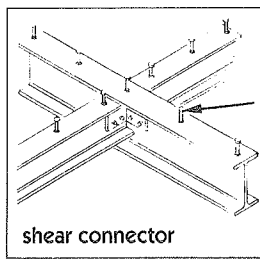
shaving A very thin slice of wood removed in dressing, and used in some types of panels.

shear **1.** An internal force tangential to the plane on which it acts. See also **shearing force**. **2.** The relative displacement of adjacent planes in a single member. **3.** To cut metal with two opposing passing blades or with one blade passing a fixed edge. **4.** The tool used for the operation in definition (3.).

shear block Face nailing of plywood to wall studs to prevent the wall from sliding and falling.

shear braces A bracing system, usually using metal brackets or straps, that eliminates most structural wall sheathing.

shear connector **1.** A welded stud, spiral bar, short length of channel, or any other similar connector that resists horizontal shear between components of a composite beam. **2.** A timber connector.



shear diaphragms Members in a structure utilized to resist shear forces, such as those caused by wind load. See also **shear wall**.

shear failure (failure by rupture)

Failure in which movement caused by shearing stresses in a soil or rock mass is of sufficient magnitude to destroy or seriously endanger a structure.

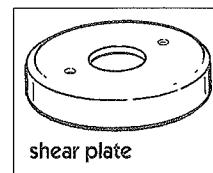
shearhead Assembled unit in the top of the columns of flat slab or flat plate construction to transmit loads from slab to column.

shearing force The algebraic sum of all the tangential forces acting on either side of the section at a particular location in a flexural member.

shearing machine **1.** An apparatus having a movable blade that passes a fixed cutting edge to cut metal. **2.** A machine used in carpet finishing to remove stray fibers and fuzzy loop pile and produce a smooth, level surface.

shear legs A hoisting device from two or more poles fastened together near their apex, from which a pulley is hung to lift heavy loads.

shear plate **1.** A shear-resisting plate used to reinforce the web of a steel beam. **2.** In heavy timber construction, a round steel plate usually inserted in the face of a timber to provide shear resistance in joints between wood and nonwood.



shear-plate connector A type of timber connector employed in wood-to-wood or wood-to-steel applications.

shear reinforcement

Reinforcement designed to resist shear or diagonal tension stresses.

shears A metal-cutting tool that has two opposing pivoted blades with beveled edges facing each other.

shear slide A type of landslide where a section of earth slides away from the material beneath it in a single consolidated mass.

shear splice A type of splice designed to distribute the shear between the two members that it joins.

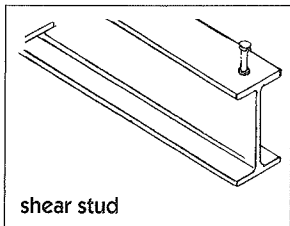
shear strain (shearing strain)

The angular displacement or deformation of a member caused by a force perpendicular to its length.

shear strength The maximum shearing stress that a material or structural member is capable of developing, based on the original area of cross section.

shear stress The shear-producing force per unit area of cross section, usually expressed in pounds per square inch.

shear stud A short unthreaded bolt welded to the top flange of a steel beam. The shear studs are embedded in a concrete slab to form a composite beam and stud.



shear stud

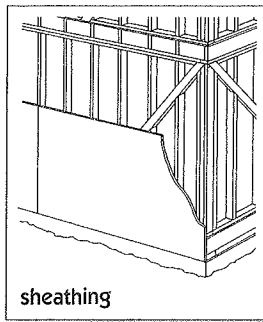
shear wall (shearwall) A wall portion of a structural frame intended to resist lateral forces, such as earthquake, wind, and blast, acting in the plane or parallel to the plane of the wall.

sheath An enclosure in which posttensioning tendons are encased to prevent bonding during concrete placement. *See also* duct.

sheathed cable Electric cable protected by nonconductive covering, such as vinyl. *See also* nonmetallic sheathed cable.

sheathing 1. The material forming the contact face of forms. Also called *lagging* or *sheeting*. 2. Plywood, waferboard, oriented strand board, or lumber used to close up side walls,

floors, or roofs preparatory to the installation of finish materials on the surface. The sheathing grades of lumber are also commonly used for pallets, crates, and certain industrial products. 3. The first covering of exterior studs or rafters by boards, plywood, or particleboard.



sheathing

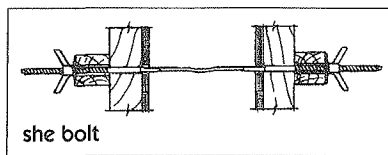
sheathing felt Roofing felt that has been saturated or impregnated, usually with some type of bitumen of low softening point (100°F to 160°F).

sheathing paper *See* building paper.

sheave 1. The grooved wheel of a pulley or block. 2. The entire assembly over which a rope or cable is passed, including not only the pulley wheel but also its shaft bearings and side plates.

sheave block A pulley with a housing and bail.

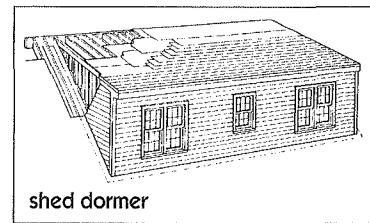
she bolt A type of form tie and spreader bolt in which the end fastenings are threaded into the end of the bolt, eliminating cones and reducing the size of holes left in the concrete surface.



she bolt

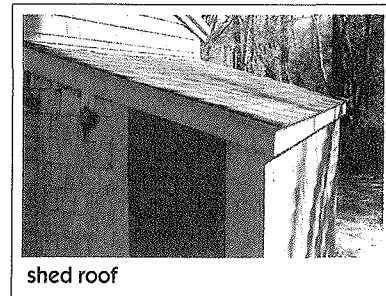
shed A small, usually roughly constructed shelter or storage building, sometimes having one or more open sides, and sometimes built as a lean-to.

shed dormer A dormer window having vertical framing projecting from a sloping roof, and an eave line parallel to the eave line of the principal roof. A shed dormer is designed to provide more space under a roof than a gabled dormer would provide.



shed dormer

shed roof A roof having a single sloping plane.



shed roof

sheen On a flat paint finish, the luster or gloss that can be seen only from certain angles.

sheen uniformity An applied finish with a consistent luster across its entire surface.

sheepsfoot roller A powered or towed earth-tamping or compacting machine consisting of a large drum with projecting studs or feet with enlarged outer ends.

sheer legs *See* shear legs.

sheet A thin piece of material, such as glass, veneer, plywood, or rolled metal. *See also* panel.

sheet asphalt A plant-mixed asphalt paving material containing sand that has passed through a 10-mesh sieve, and some type of mineral filler.

sheet glass

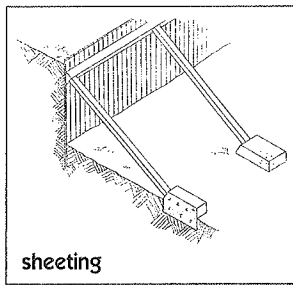
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sheet glass (common window glass)

Flat glass made by continuous drawing.

sheet groove See reglet.

sheeting **1.** Structural wood panel, usually OSB or plywood, installed over studs, floor joists, or rafters/trusses. **2.** Planks used to line the sides of an excavation, such as for shoring and bracing. *See also sheathing.* **3.** 7/8" tongue-and-groove board. **4.** Sheet piling. **5.** A form of plastic in which the thickness is very small in proportion to length or width, and in which the plastic is present as a continuous phase throughout, with or without filler.



sheeting clip A metal clip designed to fasten different thicknesses of plasterboard, plywood paneling, etc.

sheeting driver An air hammer attachment that fits onto the ends of planks to allow their being driven without splintering.

sheeting jacks Push-type turnbuckles used to support sheeting in a trench.

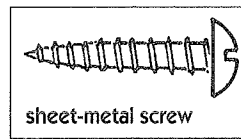
sheet lath Heavier and stiffer than expanded-metal lath, it is fabricated by punching geometrical perforations in copper alloy steel sheet.

sheet lead Lead that has been cold-rolled into a sheet and whose designation is determined by the weight of one square foot of the finished product.

sheet metal Metal, usually galvanized steel but also aluminum, copper, and stainless steel, that has been rolled to any given thickness between 0.06" and 0.249" and cut into rectangular (usually

4' x 8') sections, which are then used in the fabrication of such items as ductwork, pipe, and gutters.

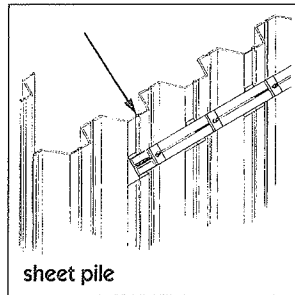
sheet-metal screw Usually a self-tapping screw, either round, flat, or pan-headed, threaded from tip to head, and used without a nut for fastening lapped sheet metal and some other materials. When equipped with a pointed tip, no tap hole is required.



sheet-metal work The fabrication, installation, and/or final product, such as the ductwork of a heating or cooling system, as performed or produced by a worker skilled in that trade.

sheet notch A channel formed along a foundation's outside edge to lend support and closure to wall sheathing.

sheet pile A pile in the form of a plank driven in close contact or interlocking with others to provide a tight wall to resist the lateral pressure of water, adjacent earth, or other materials. A sheet pile may be tongued and grooved if made of timber or concrete, or interlocking if made of metal.



sheetpiling A barrier or diaphragm formed of sheet piles that is used to prevent the movement of soil or keep out water during excavation and construction. Sheet piles are constructed of timber, sheet steel, or concrete.

Sheetrock® A trade name for gypsum drywall panel products.

sheetrock screwdriver A specialized power tool designed to accept the flat Phillips head of a sheetrock screw and drive the screw when the point is placed on the sheetrock and the tool is pushed toward it.

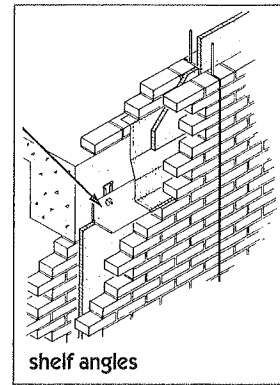
sheet-roofing nail *See roofing nail.*

Shelby tube A sampling device used to collect soil samples during a drilling operation.

shelf **1.** Any horizontally mounted board, slab, or other flat-surfaced device upon which objects can be stored, supported, or displayed. **2.** A ledge, as of rock, of a setback.

shelf angle A section of angle iron or steel that is welded or otherwise secured to an I-beam or channel section to provide support for the formwork or the hollow tiles of a concrete slab, or which, when similarly attached to a girder, carries the ends of joists.

shelf angles Structural angles with holes or slots in one leg for bolting to the structure to support brickwork, stone, or terra cotta.



shelf cleat A wood (or other) strip that supports a shelf along one edge.

shelf life Maximum duration that a material can be stored and still remain in a usable condition.

shelf nog A shelf support that consists of a piece of wood built into a wall and protruding outward from it.

shelf rest (shelf pin, shelf support)

A type of angle bracket through whose vertical portion a pin is passed and inserted into one of several position-adjusting holes such as in a wall, or cabinet.

shelf standard A metal or wood shelf support with slots that allow adjustable placement of brackets to support shelving.

shelf strip See **shelf cleat**.

shell **1.** Structural framework. **2.** In stressed-skin construction, the outer skin applied over the frame members. **3.** Any hollow construction when accomplished with a very thin curved plate or slab. **4.** The outer portion of a hollow masonry unit when laid.

shellac A transparent coating produced by dissolving lac, a resinous secretion of the lac bug, in denatured alcohol.

shell aggregate A type of aggregate made up of fine sands and the shells of mollusks, such as clams, oysters, and scallops.

shell bracket Any structural member secured to a wall or upright, from which it also projects to support a shelf.

shell construction **1.** A type of reinforced concrete construction in which thin curved slabs are primary elements. **2.** Construction in which a curved exterior surface has been obtained by using shaped steel and hardboard or curved plywood panels.

shelling See **checking**.

shell pile A load-supporting structural element that consists of a steel shell embedded in the ground and filled with concrete.

shelly structure See **perlite structure**.

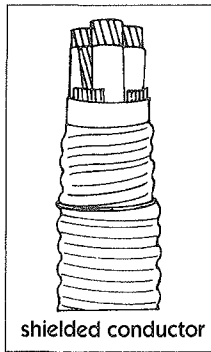
sherardizing A type of galvanizing process that is mainly used for small items such

as fittings and fasteners. Sherardizing is the diffusion coating of zinc on steel, and is accomplished by submerging items in hot zinc dust.

Sherman Anti-Trust Act Enacted by Congress in 1890 to prevent the unchecked growth of "big business" by preventing companies or individuals from holding a monopoly or controlling prices in certain areas of commerce.

shield In excavation, a short, hollow section mounted at the heading end of a jacked pipe or tunnel with a front-leaning plane to deter soil inflow.

shielded conductor An insulated electric conductor enclosed in a metal sheath or envelope.



shielded metal-arc welding An arc welding process wherein coalescence is produced by heating with an arc between a covered metal electrode and the work. Shielding is obtained from decomposition of the electrode covering. Pressure is not used, and filler metal is obtained from the electrode.

shielded pair Two insulated wires in a cable wrapped with metallic braid or foil to prevent interference caused by external electric and magnetic fields and facilitate a clean transmission.

shielding (screening) **1.** The erection of an interfering barrier (usually made of metal) to prevent electric, magnetic, or electromagnetic fields from escaping

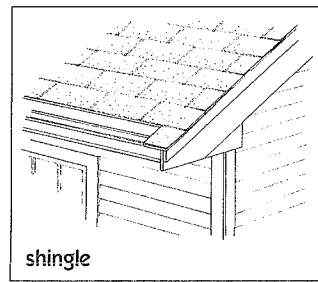
or entering an enclosed area. **2.** Any device that blocks, diffuses or redirects light, such as a baffle or lens.

shielding concrete Concrete used as a biological shield to attenuate or absorb nuclear radiation; usually characterized by high specific gravity or high hydrogen (water) or boron content.

shift **1.** The lateral movement of a faulted seam. **2.** A work period.

shim A strip of metal, wood, or other material used to set base plates or structural members at the proper level for placement of grout, or to maintain the elongation in some types of posttensioning anchorages.

shingle **1.** A roof-covering unit made of asphalt, wood, slate, asbestos, cement, or other material cut into stock sizes and applied on sloping roofs in an overlapping pattern. **2.** A thin piece of material, such as wood, cement, asbestos, or plastic, used as an exterior wall finish over sheathing.



shingle backer A specially fabricated sheathing-grade structural insulating board used as a backer strip in coursed shingle construction.

shingle lap A type of lap joint whereby the thinner of two tapered surfaces is lapped over the thicker.

shingle molding An exterior molding used at the joint of roof shingles and the fascia.

shingle nail

S

shingle nail A galvanized steel, aluminum alloy, or coated steel nail, often having a threaded shank. There are two types of shingle nails: one for wood shingles and one for asphalt shingles, the latter having a larger head.

shingle ridge finish See **Boston hip**.

shingle stain A low-viscosity, pigmented finish that penetrates wood shingles to provide moisture protection as well as color.

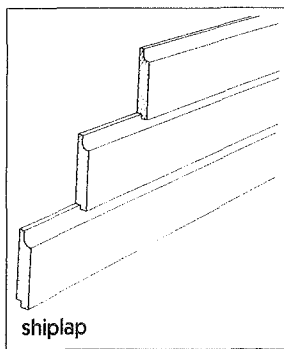
shingle tile A flat clay tile used primarily for roofing and laid so as to overlap.

shinglewood Another name for western red cedar.

shingling hatchet (claw hatchet) Similar to a lath hammer, this tool consists of a hammer head, a hatchet, and a notch or nail claw.

ship decking Full-sawn, vertical-grain pieces, knot-free on the faces; used in the construction of ship decks.

shiplap **1.** Lumber that has been worked to make a rabbeted joint on each edge so that pieces may be fitted together snugly for increased strength and stability. **2.** A similar pattern cut into plywood or other wood panels used as siding to ensure a tight joint.



shipping position A seller's estimate of the time required after an order is placed until it can be shipped.

shivering (peeling) The splintering that critical compressive stresses can precipitate in fired glazes or other ceramic coatings.

shock See **thermal shock**.

shock-free head Typical bumping post used in railroad construction that will absorb shock when hit by a rail car.

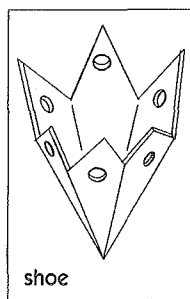
shock hazard Considered to exist between an accessible part in a circuit and the ground or other accessible parts, if the potential is more than 42.4 volts peak and the current through a 1,500-ohm load is more than 5 milliamperes.

shock load The impact load of material such as aggregate or concrete as it is released or dumped during placement.

shock mount See **vibration isolator**.

shoddy work Any work that has been performed carelessly and/or unprofessionally.

shoe **1.** Any piece of timber, metal, or stone receiving the lower end of virtually any member. Also called a *soleplate*. **2.** A metal device protecting the foot, or point, of a pile. **3.** A metal plate used at the base of an arch or truss to resist horizontal thrust. **4.** A ground plate forming a link of a track, or bolted to a track line. **5.** A support for a bulldozer blade or other digging edge to prevent cutting down. **6.** A cleanup device following the buckets of a ditching machine. **7.** A short section used at the base of a downspout to direct the flow of water away from a wall.



shoe molding A base shoe used at the bottom of a baseboard to cover the space between the finished flooring and the baseboard.

shoe rail The molding on the top of a stair string to support the balusters.

shoot To straighten the edge of a board with a plane.

shooting The placing of shotcrete.

shooting board A jig to hold a board while its edge is being squared or beveled.

shooting plane A light plane used to square or bevel the edge of a board with a shooting board.

shop coat A surface coating applied in a fabricating shop.

shop drawings Drawings created by a contractor, subcontractor, vendor, manufacturer, or other entity that illustrate construction, materials, dimensions, installation, and other pertinent information for the incorporation of an element or item into the construction.

shop lumber (factory lumber) Lumber graded, in a shop or factory, according to the number of pieces, of designed size and quality, into which it may be cut.

shop painting The application of paint, usually one coat, to metals in the shop before shipment to a job site.

shopping center A collection of stores, shops, and service centers, along with parking facilities.

shop planning The coordination of material handling, material availability, the setup and tooling availability so that a job can be done on a particular machine.*

shop rivet A rivet driven in the shop.

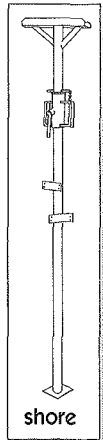
shop steward A union official elected to represent members of a particular trade or department. Position responsibilities include soliciting new members, collecting dues, and initial negotiations for grievances.

shopwork Work manufactured or assembled in the shop.

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shore (post, prop, strut, tom)

A temporary support for formwork and fresh concrete or for recently built structures that have not developed full design strength. *See also* T-head.

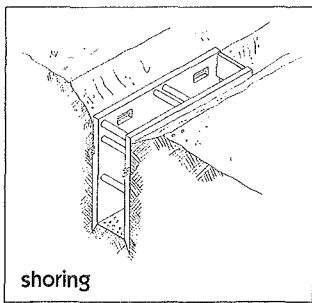


shore hardness number A number representing the relative hardness of materials. It is the height of rebound observed when a standard hammer strikes the material being tested.

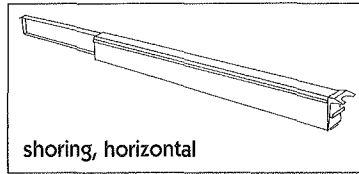
shore head A wood or metal horizontal member placed on and fastened to a vertical shoring member. *See also* raker.

shore up To support with shores.

shoring **1.** Props or posts of timber or other material in compression; used for the temporary support of excavations, formwork, or unsafe structures. **2.** The process of erecting shores.



shoring, horizontal A metal or wood load-carrying strut, beam, or trussed section used to carry a shoring load from one bearing point, column, frame, post, or wall to another. Horizontal shoring may be adjustable.



shoring layout A drawing prepared prior to erection showing the arrangement of equipment for shoring.

short circuit An accidental electric connection of relatively low resistance between two points of different potential in an electric circuit, causing a high current flow between the two points.

short-cycling The turning off, followed by immediate re-starting of a compressor or furnace.

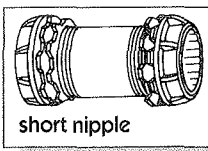
short face (narrow face) A sales term used when describing tongue-and-groove siding that includes the tongue within the stated width.

short grain Wood in which part of the grain runs diagonally to the length of the piece and that is subject to failure under load.

shortleaf pine *Pinus echinata*. This species, one of the Southern group, is found in a broad range, from Texas to as far north as Pennsylvania and New Jersey.

short-length **1.** A piece of stock lumber usually less than 8' (2.44m) long. **2.** A piece of sawn hardwood usually less than 6' (1.83m) long (Brit).

short nipple A pipe nipple with a short unthreaded length between the threaded ends.



short-oil varnish A varnish having a low vehicle content, containing less than 15 gallons of oil per 100 pounds of resin.

shorts Short pieces of lumber. The lengths described as shorts vary widely by species, products, and regions. Generally, a dimension of 12' or less is described as short, while boards of 6' or less are also shorts.

short ton A unit of measurement of weight in the English system equal to 2,000 pounds.

short working plaster Plaster that is difficult to work and from which the sand separates, due to its being affected by moisture over a long storage period.

shotblasting A process similar to sandblasting, except that metal shot is used. Often used to remove oil and grime from old pavement surface.

shotcrete **1.** Mortar or concrete pneumatically projected at high velocity onto a surface. Also known as air-blown mortar. **2.** Pneumatically applied mortar or concrete, sprayed mortar, and gunned concrete. *See also* dry-mix shotcrete, pneumatic feed, positive displacement, and wet-mix shotcrete.

shotcrete gun A pneumatic device used to deliver shotcrete or to move concrete.

shot saw A power tool that shoots steel pellets to cut and finish building stone.

shot tower A tower used in the manufacture of metal shot. Molten lead is dropped from a height into water.

shoulder **1.** An unintentional offset in a formed concrete surface usually caused by bulging or movement of formwork. *See also* ear. **2.** The enlarged section of a bolt or screw shank just below the head.

shoulder bolt In construction, a fastener that attaches wall and roof paneling to framing members.

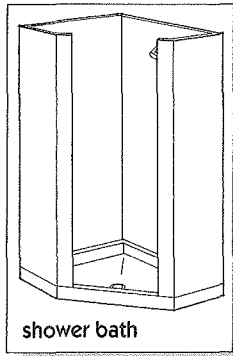
shouldering

S

shouldering Placing mortar under the top edge of a slate so the lower edge will fit closer to the slate beneath.

shoved joint A vertical joint in brickwork made by laying the brick in a bed of mortar and shoving the brick toward the last brick laid.

shower bath (shower, shower stall)
The compartment and plumbing provided for bathing by overhead spray.



shower-bath drain A floor drain in a shower bath.

shower head A nozzle used to spray water in a shower bath.

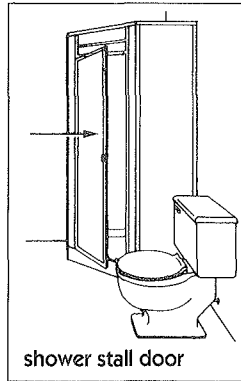
shower mixer A valve in a shower bath used to mix hot and cold water supplies to obtain a desired water temperature.

shower pan A pan of concrete, terrazzo, concrete and tile, or metal used as a floor in a shower bath.

shower partition A partition used around a shower bath for privacy.

shower room Part of the worker decontamination enclosure system. Usually located between the equipment room and the clean room, acts as an airlock between contaminated and noncontaminated areas. Contains hot and cold tap water suitable for showering during decontamination.

shower stall door A door in a shower partition.



show rafter A rafter, often ornamental, that is visible below a cornice.

show window A window used to display merchandise.

shrinkage Volume decrease caused by drying and/or chemical changes, such as of concrete or wood.

shrinkage, drying See drying shrinkage and shrinkage.

shrinkage-compensating A characteristic of grout, mortar, or concrete made using an expansive cement in which volume increase, if restrained, induces compressive stresses intended to approximately offset the tendency of drying shrinkage to induce tensile stresses. See also **expansive cement**.

shrinkage crack A crack due to restraint of shrinkage.

shrinkage cracking The cracking of a structure or member due to failure in tension caused by external or internal restraints from carbonation and/or reduction in moisture content.

shrinkage factor The percentage of reduction in volume of a given soil from bank to compacted state.

shrinkage joint See **contraction joint**.

shrinkage limit The water content at which a reduction in water content will not cause a decrease in volume of the soil mass but an increase in water will increase the volume. See also **Atterberg limits**.

shrinkage loss Reduction of stress in prestressing steel resulting from shrinkage of concrete.

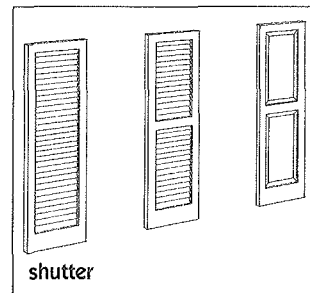
shrinkage reinforcement
Reinforcement designed to resist shrinkage stresses in concrete.

shrink-mixed concrete Ready-mixed concrete mixed partially in a stationary mixer and then mixed in a truck mixer. See also **preshrunk concrete**.

shrunk joint A joint made by placing a piece of heated pipe over the ends of two cool pipes and allowing it to contract.

shunt An electrical device with a low resistance or impedance connected in parallel across another electrical device to divert current from the second device.

shutter A movable cover or screen used to cover an opening, especially a window opening.



shutter bar A hinged bar used to fasten a pair of shutters together in the closed position.

shutter blind An exterior adjustable louver used at a window.

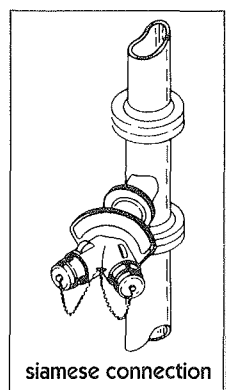
shutter butt A narrow hinge used on shutters and small doors.

shuttering 1. British term for concrete formwork. 2. Closures for windows or vents.

shutting shoe A receptacle of metal or stone set in the paving or ground beneath a gate with two leaves to receive the vertical bolt.

SIA Format A standard format developed by the Security Industry Association for alarm system communications interfaces.

siamese connection A wye connection on the outside of a building with two inlet connections, used by the fire department to supply water to a sprinkler and/or standpipe system.



sick building syndrome (SBS)

A condition where a significant proportion of the occupants of a building experience symptoms that are not related to a specific disease and that usually disappear when they leave the building. These symptoms are usually caused by indoor pollutants such as volatile organic compounds. *See also indoor air quality and building-related illness.*

sidecast During the construction of a logging road, the pushing of waste soil and debris over the downhill side.

sidecasting Piling soil beside the excavation.

side-construction tile Tile designed to be used with the cells set horizontally.

side cut *See* cheek cut.

side-cutting pliers General purpose pliers to snip light-gauge wire. Its jaws have both a gripping and a cutting section.

side-dump loader An earth loader with its bucket mounted on a pivot so it can be dumped to either side as well as in front.

side-entrance manhole A deep manhole with the access shaft built into the side of the inspection chamber.

side gutter A small gutter along a side of a chimney or dormer.

sidehill A slope crossing the line of work.

sidehill cut An excavation for a highway through a sidehill, leaving a bank on one side only.

side hook *See* bench hook.

side-hung window *See* casement window.

side jamb A vertical member forming a side of a door opening.

side knob screw A setscrew used to secure a doorknob to a spindle.

side lap The distance that a piece of material, such as steel roof deck, overlaps an adjacent piece.

side light A fixed frame of glass beside a window or door.

sidelighting A form of daylighting that provides natural, directional light.

side mounting Typical mounting detail for posts and rails to a fascia when floor mounting is not an option.

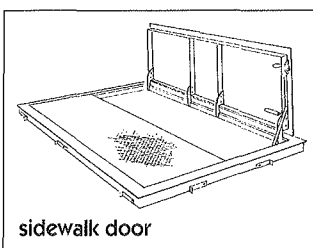
side outlet An ell or tee fitting with an outlet at right angles to the line of run.

side post One of a pair of posts in a roof truss, each set at an equal distance from the center of the truss.

side sewer *See* lateral sewer.

side vent A vent connected to the drain pipe at an angle of 45° or less from vertical.

sidewalk door A cellar door opening directly onto a sidewalk. The door is flush with the sidewalk when closed.

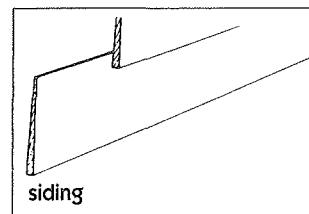


sidewalk elevator **1.** An elevator opening onto a sidewalk. **2.** An elevator platform without a cab that rises to a level flush with a sidewalk.

sidewall The exterior wall of a building.

side yard The open space between a side of a dwelling and the property line.

siding (weatherboarding) Lumber or panel products intended for use as the exterior wall covering on a house or other building.



siding gauge *See* clapboard gauge siding.

sieve A metallic plate or sheet, a woven wire cloth, or other similar device, with regularly spaced apertures of uniform size, mounted in a suitable frame or holder, for use in separating material according to size. In mechanical analysis, an apparatus with square openings is a sieve; one with circular apertures is a screen.

sieve analysis The determination of the proportions of particles within certain size ranges in a granular material by separation on sieves of different size openings. *See also* grading.

sieve correction Correction of a sieve analysis to adjust for deviation of sieve performance from that of standard calibrated sieves.

sieve number A number used to designate the size of a sieve, usually the approximate number of openings per inch. The number is applied to sieves with openings smaller than 1/4" (6.3mm).

sieve size The nominal size of openings, usually between cross wires of a testing sieve.

sight draft

S

sight draft An instrument of payment negotiated through banks. Negotiable documents are attached, such as an order bill of lading, thus ensuring payment by the consignee to the negotiating bank in exchange for the documents and prior to the delivery of goods.

sight glass A glass tube used to indicate the liquid level in boilers, tanks, etc.

sighting rod See *leveling rod and range rod*.

sight rail A series of rails set with a surveying instrument, and used to check the vertical alignment of a pipe in a trench.

sight rod See *leveling rod and range rod*.

sign (signboard) **1.** A board or surface displaying directions, instructions, identification, or advertising. **2.** A warning of hazard, temporarily or permanently affixed or placed at a location where a hazard exists.

signal Aggregate waves that are transmitted or received.

signal sash fastener A sash fastener beyond reach of a person. The fastener consists of a catch operated by a ring moved by a fitting on a long pole.

silencer See *rubber silencer*.

silica Silicon dioxide (SiO_2).

silica brick A refractory brick made from quartzite containing approximately 96% silica with alumina and lime.

silica flour (silica powder) Very finely divided silica; a siliceous binder cement that reacts with lime under autoclave curing conditions. The flour is prepared by grinding silica, such as quartz, to a fine powder.

silica gel (synthetic silica) A drying agent made from a form of silica.

silica powder See *silica flour*.

silicate Salt of a silicic acid.

silicate paint A paint utilizing sodium silicate as the binding agent.

silicon A metallic element used mainly as an alloying agent but used in pure form in electrical rectifiers.

silicon bronze A copper alloy used in hardware and other applications where a high resistance to oxidation is desirable.

silicon carbide An artificial product (SiC), granules of which may be embedded in concrete surfaces to increase resistance to wear or as a means of reducing skidding or slipping on stair treads or pavement. Silicon carbide is also used as an abrasive in saws and drills for cutting concrete and masonry.

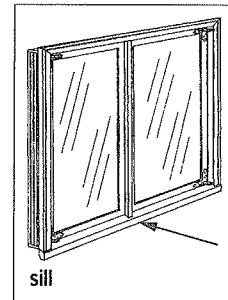
silicone A resin, characterized by water-repellent properties, in which the main polymer chain consists of alternating silicon and oxygen atoms, with carbon-containing side groups (free radicals). Silicones may be used in caulking or coating compounds or admixtures for concrete.

silicone-carbide paper A tough, black, water-resistant sandpaper used in wet sanding and finishing.

silicone paint A heat- and chemical-resistant paint used on chimneys, stoves, and heaters, that requires heat to cure.

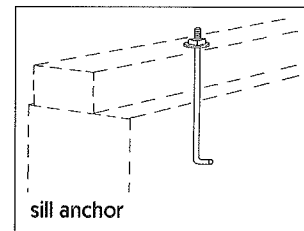
silicosis An ingredient in sand, which, if inhaled during sawing of the fiber-cement siding material, can cause respiratory disease.

sill **1.** The horizontal member of the bottom of a window or exterior door frame. **2.** As applied to general construction, the lowest member of the frame of the structure, resting on the foundation and supporting the frame. See also *mudsill*.



sill, lug A sill with ends that project into the masonry. Lug sills must be installed as the structure is built.

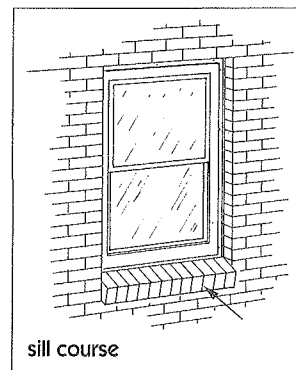
sill anchor An anchor bolt used to fasten a sill to its foundation.



sill block A solid concrete masonry unit used as a sill for an opening.

sill cock A water faucet located on the exterior of a building roughly at the top of the sill. A sill cock is usually threaded to provide a connection for a hose.

sill course A course of brickwork at a windowsill, usually projected to shed water.



sill high 1. Located at the height of a sill above the floor. 2. Located at the height of a sill above ground level.

sill plate or mudsill 1. A horizontal framing member installed on a structure's foundation. 2. The bottom framing member of an interior wall frame.

sill seal Insulation (fiberglass or foam) installed between the foundation wall and wood sill plate to fill gaps.

silo 1. A tower-like structure, usually cylindrical, used to store items such as grain, coal, or minerals. 2. A structure built in the ground to house a military missile.

silt (inorganic silt, rock flour) 1. A granular material resulting from the disintegration of rock, with grains largely passing a No. 200 (75-micrometer) sieve. 2. Such particles in the range from 2 to 50 micrometers in diameter.

siltation test A test to measure the impurities present in a sand sample.

silt box A steel box in a catch basin that can be removed to clean out the silt.

silt grade Descriptive of sediment having particles of silt size.

silt trap A trap that catches waterborne soil before it can enter a drainage system and obstruct flow.

silver fir See *Pacific silver fir*.

silver-lock bond Brickwork consisting of courses of alternating headers and stretchers laid on edge.

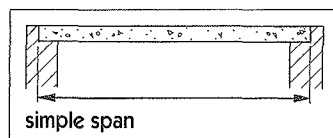
silver solder A solder containing silver and having a high melting point, used for high-strength solder joints.

silver spruce See *Sitka spruce*.

silver white 1. Any white pigment used in paints. 2. A very pure white lead.

simple beam A beam without restraint or continuity at its supports.

simple span The support-to-support distance of a simple beam.



simplex casement A swing-out window with no mechanical device for opening and closing.

simulated masonry
Products manufactured from a variety of materials including cement, minerals, epoxy, and fiberglass and used to simulate natural stone.

single-acting door Any door mounted so that it swings in only one direction.

single-acting hammer A pile-driving hammer using compressed air or steam to raise the ram to the height from which it is dropped.

single bridging Single pieces of wood fixed between joists, as opposed to diagonal bridging.

single-cleat ladder A ladder made of two side rails with single treads between them. See also *double-cleat ladder*.

single contract A construction contract arrangement under which a prime contractor is accountable for all of the work.

single-cut file A file having serrations cut in one direction only.

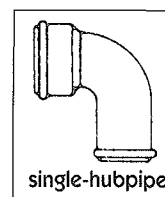
single-duct system An air-conditioning system using one duct to serve a number of different areas.

single Flemish bond A bond in a brick wall using Flemish bond for the facework and English bond for the body.

single floor A floor of joists and flooring only, without intermediate support.

single-framed roof A roof-framing system in which the rafters are tied together by boards or by the framing of the floor or ceiling below.

single-hubpipe A pipe with a hub at one end only.

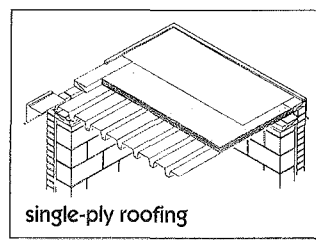


single-hung window A window with a movable and a fixed sash that is vertically hung.

single-lap tile A curved roofing tile laid so as to overlap only the tile directly below it.

single-package refrigeration system
A factory-assembled and tested refrigeration system shipped in one section. No refrigerant-containing parts are connected in the field.

single-ply roofing A membrane roofing system that uses polymer-based synthetic material in flexible sheet or liquid form as an alternative to traditional built-up roofing. Made from a variety of bitumens, polymers, fillers, plasticizers, stabilizers and other additives, single-ply roofing products are commonly applied over an insulating material and secured with ballast, mechanical fasteners or an adhesive.



single-point adjustable suspension scaffold A manually or power-operated platform supported by a single wire attached to its frame; used for light work only.

single-pole scaffold

S

single-pole scaffold A platform resting on putlogs or crossbeams supported on ledger beams and posts on the outer side and by the wall on the inner side.

single-pole switch An electric switch with one movable and one fixed contact.

single prime contractor A constructor acting alone to fulfill the contractor's responsibility under the contract for construction.

single-roller catch A catch consisting of a spring-loaded roller on the door and a strike plate on the jamb. The door catches automatically and is opened by pushing or pulling.

single roof A roof supported only by common rafters.

single-sized aggregate Aggregate in which a major portion of the particles are of sizes between narrow limits.

single span Any structure without intermediate support.

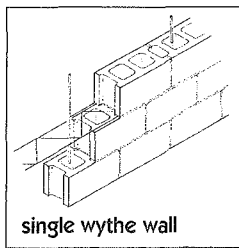
single-stage absorption In an HVAC system, absorption chillers with one generator to evaporate refrigerant (water) from the solution.

single-stage curing An autoclave curing process in which precast concrete products are put on metal pallets for autoclaving and remain there until stacked for delivery or yard storage.

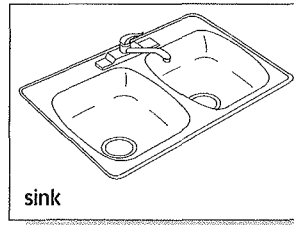
single-swing frame A frame in which one swinging door is mounted.

single-throw switch An electric switch opened or closed by the operation of a single pair of contacts.

single wythe wall A stone, brick, or concrete wall that is one masonry unit thick.



sink 1. A plumbing fixture consisting of a water supply, a basin, and a drain connection. 2. A surface material (such as fabric, carpet, and gypsum wall board) that captures VOCs (volatile organic compounds) from the air within a building and then off-gasses them.



sinker nail A wire nail with a small, slightly depressed head, driven below the surface of a wood member as a hidden fastener.

sinking 1. A shallow depression in an object. 2. The process of removing wood in a jamb so that the hinges can be installed flush.

sinking in The penetration of a paint binder into an unprimed, porous surface resulting in a finish coat with low gloss.

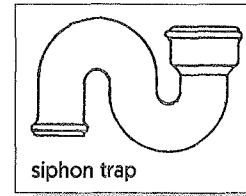
sinter The process of forming a material by heating powder to a temperature just below its melting point so that it fuses together.

sintering grate A grate on which material is sintered.

siphonage The removal of fluid from a device, such as a trap, caused by suction produced by fluid flow.

siphon break 1. During a toilet flush, the point when air is re-introduced into the trapway, ending the siphoning or pulling action that empties the bowl. 2. A small groove in a surface that breaks capillary action and diverts water.

siphon trap An S-shaped plumbing trap containing water as a gas seal.



S-iron A retaining plate at each end of a tie rod used with a turnbuckle to tie two masonry walls together.

sisal 1. A fiber from the leaves of the sisal plant; used in making rope and cord, and as reinforcing in plaster.

2. A durable natural fiber used as a floor covering, derived from leaves of the sisal plant.

sissing See **cissing**.

sistering The reinforcement of a structural member by nailing or attaching a stronger piece to a weaker one.

sit-down strike A strike in which the workers stay on the site or in the plant but refuse to work.

site The location of a project geographically, usually defined by legal boundaries.

site analysis services Services, as described in a schedule of designated services, that are necessary to determine limitations of a site and the corresponding project requirements.

site audit A review of activities at a construction site to identify potentially inappropriate material and wasteful management practices.

site built The construction of a structure at the site where it is to remain.

site characterization In an environmental remediation operation, the process of defining and analyzing the contaminants and media of a site to determine the nature and extent of contaminants present.

site closeout The final phase in an environmental remediation effort that occurs after it is determined that site poses no future significant health risk.

site conditions clause A contract clause that typically requires the contractor to, at a minimum, inspect and understand the grade level and above-ground job site conditions prior to the start of any construction activities. The clause may also obligate the contractor to take full responsibility for the site's subsurface conditions.

site drainage **1.** An underground system of piping carrying rainwater or other wastes to a public sewer. **2.** The water so drained.

site drawings Also called civil drawings, these illustrate a structure's relationship to the property, including various engineering improvements to the site, such as the sanitary system, utilities, paving walks, curbing, and so forth.

site exploration See **site investigation**.

site-foamed insulation

Thermal insulation foamed in place.

site investigation A complete examination, investigation, and testing of surface and subsurface soil and conditions. The report resulting from the investigation is used in design of the structure.

site plan A plan of the area of a proposed construction operation, including the building outline, parking, work areas, and/or property lines.

site preservation Minimizing the effect of a new building on the building site (environment).

site safety officer The person responsible for establishing the appropriate health and safety equipment to be used by workers at a hazardous waste site.

Sitka spruce *Picea sitchensis*. A lightweight, but particularly strong species used for timber, paper, musical instruments and vessel components. The range of Sitka spruce is a narrow belt extending along the Pacific coast from Alaska to northern California.

sitzbath A bathtub, designed to support a person in the sitting position, used for therapeutic treatment.

size **1.** To bring a piece of lumber to specified dimensions. **2.** See **sizing**.

sized dry Lumber surfaced or sawn to a specific size after being dried.

sized green Lumber surfaced or sawn to a specific size while still green and subject to further shrinkage. The National Grading Rule for dimension lumber sets slightly larger sizes for green lumber than for dry to reflect shrinkage.

sized lumber Lumber uniformly manufactured to net surfaced sizes. Sized lumber may be rough, surfaced, or partly surfaced on one or more faces.

sizing (size) The application of diluted glue or adhesive to hardwood veneer to prepare the wood for application of a standard concentration of glue. Sizing reduces the amount of standard glue that will be absorbed. Sizing is often used when woods of different densities are glued together.

sizing saw A saw that trims large timbers to the desired dimensions.

skeleton construction A type of construction in which loads are carried on frames made of beams and columns. Walls of upper floors are supported on the frames.

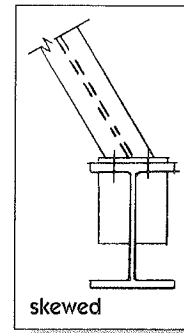
skeleton steps A simple stairway consisting of treads and a support carriage, but no risers.

skew back (skewback) A sloping surface against which the end of an arch rests, such as a concrete thrust block supporting the thrust of an arch bridge. See also **chamfer strip**.

skew chisel A woodworking chisel with a sharp cutting edge of oblique angle and beveled sides.

skew corbel A specially shaped stone at the bottom of a stone gable forming an abutment for the coping, eave gutters, or wall cornices.

skewed Forming an oblique angle with a main center line.



skew fillet A fillet-shaped piece nailed along the gable coping under the slate to divert water from the edge.

skew nailing See **toenailing**.

skew plane A woodworking plane with the blade at an oblique angle across the face.

skid resistance A measure of the frictional characteristics of a surface.

skim coat A thin coat of plaster, usually either the finish coat or the leveling coat.

skin **1.** The materials, such as steel, aluminum and/or glass that make up a curtain wall. **2.** The outer veneer or ply of a lamination or built-up piece. **3.** The thin face of a hollow-core door. **4.** A tough layer formed on the surface of paint in a container. **5.** A dense layer on the surface of a cellular material.

skin drying The rapid drying of the surface of a paint film while the material underneath remains wet.

skin friction The friction between soil and a structure, such as a retaining wall, or between soil and a pile.

skinner saw A saw that trims and sizes the 8' side of a plywood panel as it leaves the press. The 4' side is trimmed by a cut-off saw.

skintled brickwork Brickwork laid so the resulting face is irregular.

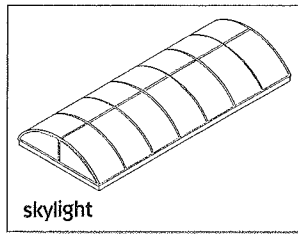
skirt

S

skirt (apron) The border or section of molding under a window stool.

skirting block **1.** A corner block where a base and vertical framing meet. **2.** A concealed block to which a baseboard is attached.

skylight A glazed opening in a roof to admit light.

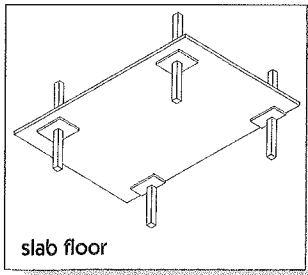


slab **1.** A flat, horizontal (or nearly horizontal) molded layer of plain or reinforced concrete, usually of uniform but sometimes of variable thickness, positioned either on the ground or supported by beams, columns, walls, or other framework. **2.** The outside, lengthwise cut on a log. **3.** A door without hinges or a frame attached. See also flat slab and flat plate.

slab bar bolster A wire form used to support reinforcing while placing concrete.

slab board A rough board cut from the side of a log with bark and sapwood intact.

slab floor A floor of reinforced concrete.

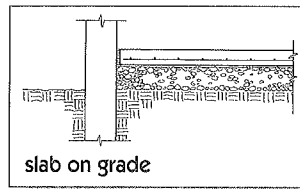


slab form The formwork used in placing a concrete slab.

slabjacking A process used to correct concrete slabs that have sunk. Holes

are drilled through the slab and materials are forced through the holes to raise the slab.

slab on grade A concrete slab placed on grade, sometimes having insulation board or an impervious membrane beneath it.



slab-on-grade construction A type of construction in which the floor is a concrete slab poured after plumbing and other equipment is installed.

slab spacer Bar support and spacer for slab reinforcement, similar to slab bolster but without corrugations in top wire, no longer in general use.

slab strip See middle strip.

slack The amount allowed for contingency in an estimate. See also loose estimate.

slack-rope switch A safety device that shuts off electric power to the drive of an elevator if the supporting cables become slack.

slag See blast-furnace slag.

slag block A concrete masonry unit with blast furnace slag as the coarse aggregate.

slag concrete Portland cement concrete with blast furnace slag as the coarse aggregate.

slag sand A sandlike material made by crushing and grading blast furnace slag.

slake **1.** To add water to quicklime to make putty. **2.** To crumble or disintegrate on exposure to moist air.

slaked lime See hydrated lime.

slaking box A wooden box used to hold materials while slaking lime.

slamming strip An inlay along the edge of the lockstile of a flush wood door.

slant A sewer pipe connecting a house sewer to a common sewer.

slasher saw A set of circular saws operated in combination for quick cross-cutting of lengths of wood before chipping or grinding into pulp fibers, or as fuel.

slash pine *Pinus elliottii*. One of several pine species grouped under the designation of southern yellow pine (SYP). Slash pine is native to the Southeastern and Gulf Coast states. It is fast-growing and matures early, and is often used for reforestation.

slat A thin, narrow strip of wood, metal, or plastic.

slate A fine-grained metamorphic rock possessing a well-developed fissility (slaty cleavage) usually not parallel to the bedding planes of the rock.

slate-and-a-half slate Slate 1-1/2 times as wide as other slates on a roof but of the same length.

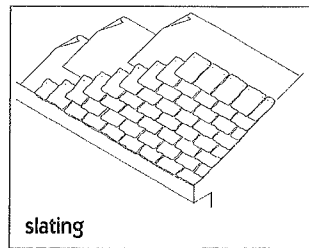
slate batten A batten fastened across rafters in order to support slates on a roof.

slate boarding Close boarding used to support slates or tiles.

slate powder A powder made from slate, used as an extender in paint.

slate roll (slate ridge) A cylindrical rod formed from slate, having a V-shaped notch cut on its underside, and used to form the ridge on a roof.

slating **1.** The installation of slates on a roof or wall. **2.** The slate shingles on a roof or wall, taken collectively.



slave A mechanism under the control of a similar mechanism, or a point that responds to a trigger. In fire safety systems, for example, if a fire alarm causes a siren to go off, the siren is the slave.

slave unit A device or machine controlled or activated through another unit.

sledgehammer (sledge) A heavy hammer of up to 100 lbs. (45kg), having two striking faces, and swung with both hands.

sled runner A hand tool with a curved or right-angled blade that is used to create uniform masonry joints.

sleeper **1.** One of many strips of wood fastened to the top of a concrete slab to support a wood floor. **2.** Any horizontal timber laid on the ground to distribute load from a post.

sleeper clip A metal clip used to fasten sleepers to a concrete subfloor.

sleeper joist A joist supported on sleepers.

sleeper wall Any short wall that supports floor joists.

sleepiness A film defect consisting of an area of lower gloss in a high-gloss film.

sleeve See pipe sleeve.

sleeve fence A short, decorative fence extending out from a dwelling.

slender beam A beam that if loaded to failure without lateral bracing of the compression flange would fail by buckling rather than in flexure.

slenderness ratio The ratio of effective length or height of a wall, column, or pier to the radius of gyration. The ratio is used as a means of assessing the stability of the element.

slewing Rotating the jib of a crane so the load moves through a horizontal arc.

sliced veneer Veneer sliced from a face of a squared-off log.

slicker See darby.

slick line The end section of a pipe-line used in placing concrete by pump that

is immersed in the placed concrete and moved as the work progresses.

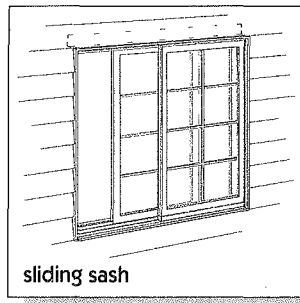
slide rule A device used to make certain calculations rapidly, consisting of a base of wood, metal, plastic, or cardboard with various scales and a scaled sliding insert. The calculations are made by offsetting appropriate scales.

sliding bearing A support for a structure that slides relative to a base structure.

sliding fire door A fire door hung from an overhead track. The track may be sloped for direct gravity operation or horizontal with operation by weights, cables, and pulleys.

sliding form See slipform.

sliding sash Any window that moves horizontally in grooves.



sliding sash

sliding T-level A hand tool with an adjustable blade that is used to locate, transfer and lay out angles from 0 to 360 degrees.

sliding window See sliding sash.

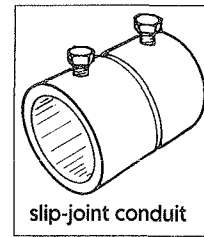
slimline lamp A type of instant-starting fluorescent lamp with a single pin base.

slip Movement occurring between steel reinforcement and concrete in stressed, reinforced concrete indicating anchorage breakdown.

slip form (slipform, sliding form) A form that is pulled or raised as concrete is placed. The form may move in a generally horizontal direction to lay concrete evenly for highway paving or on slopes and inverts of canals, tunnels, and siphons; or vertically to form walls, bins, or silos.

slip joint **1.** A vertical joint between an old and a new brick wall, made by cutting a slot in the old wall and filling it with brick projecting from the new wall. **2.** A joint in plumbing in which one pipe slips within another and the seal is made by a pressure device fitting over the joint, often threaded to the larger pipe.

slip-joint conduit Electric conduit connected by short couplings that slip over the ends of the conduit.



slip-joint conduit

slip-joint pliers Pliers having jaws connected by a rivet through a slot in one part, allowing two settings for the jaws.

slip match A veneer pattern that creates a repeat effect by laying similarly grained wood sheets alongside each other.

slip mortise See slot mortise.

slip newel A newel that either has a hollowed base to slip over a peg, or is grooved to fit a wall.

slip-on flange A flange slipped over the end of a pipe, and welded in place.

slippage The lateral movement of adjacent roofing plies.

slip-resistant tile Ceramic tiles with abrasive particles or grooves in the surface.

slip sheet Protective paper placed over the faces of prefinished plywood paneling to protect them during transport.

slip sill A sill cut to fit between jambs and installed after the walls are in place.

slip stone A handheld, coarse sharpening stone used to hone cutting and woodworking tools.

slip tongue

S

slip tongue See **spline**.

slogging chisel A heavy chisel used to cut off the heads of bolts.

slope **1.** The angle of repose at which a soil material will stand without moving. **2.** The slope of a roof, ramp, or paving expressed as one unit of rise to one unit of run. See also **pitch**, **incline**, and **grain slope**.

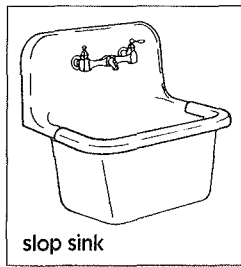
slope correction See **grade correction**.

sloped footing A footing having a sloping top or sloping side faces.

slope map A map displaying the topography of an area, along with a discussion of topographic features.

slope ratio Relation of the horizontal projection of a surface to its rise. For example, 2' horizontal to 1' rise is shown as 2:1 or 2 to 1.

slop sink A deep sink set low on a wall, used to clean mops and to empty and clean pails.



sloshed joint A vertical joint made by sloshing mortar into the joint after the unit is laid.

slot dozing Operating a bulldozer inside of a self-made trench.

slot mortise (open mortise, slip mortise) A mortise that does not extend the full length of the member in which it is cut.

slot outlet An air supply outlet with a length-to-width ratio greater than 10:1.

slot weld A weld between two members made by welding within a slot in one of the members.

sloughing Subsidence of shotcrete, due generally to excessive water in mixture. See also **sagging**.

slow-burning A misleading term implying that a material is fire-safe. The term must be related to a particular test for interpretation.

slow-burning construction Heavy timber construction with large flat surfaces, as opposed to joisted construction.

slow-burning insulation Insulation that burns or chars without a flame. See also **slow-burning**.

slow-curing asphalt Liquid asphalt made of asphalt cement and oils of low volatility.

slow down An organized effort by workers by which production is slowed in an effort to pressure management for better terms or conditions for working.

slow-evaporating solvent A solvent with a high boiling point, used to lengthen, and thus improve, the drying time of paint.

sludge **1.** The semi-liquid, settled solids from treated sewage. **2.** Waste material composed of wet fines produced from grinding a terrazzo floor.

3. Accumulated solids in the wash water reservoir of paint spray booths.

sludge composting Processing treated sewage waste so that it can be used to amend soil.

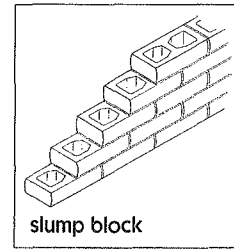
slugging The pulsating and intermittent flow of shotcrete material due to improper use of delivery equipment and materials.

sluice A steep, narrow passage for water. See also **sluicing**.

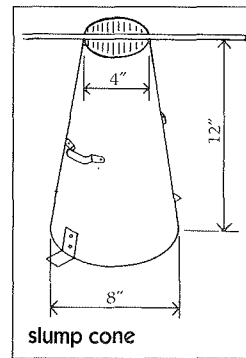
sluicing Moving soil by use of rapidly flowing water, for excavation or particle grading.

slump A measure of consistency of freshly mixed concrete, mortar, or stucco equal to the subsidence measured to the nearest 1/4" (6 mm) of the molded specimen immediately after removal of the slump cone.

slump block A concrete masonry unit intentionally removed early from a mold so that it slumps slightly.



slump cone A mold in the form of the lateral surface of the frustum of a cone with a base diameter of 8" (203 mm), top diameter 4" (102 mm), and height 12" (305 mm), used to fabricate a specimen of freshly mixed concrete for the slump test. A cone 6" (152 mm) high is used for tests of freshly mixed mortar and stucco.



slump loss The amount by which the slump of freshly mixed concrete changes during a period of time after an initial slump test was made on a sample or samples thereof.

slump test The procedure for measuring slump. See also **concrete slump test**.

slurry A mixture of water and any finely divided insoluble material, such as Portland cement, slag, or clay in suspension.

slurry seal machine A self-propelled machine used for delivering a mixture such as an asphalt emulsion slurry seal.

slurry wall A vertical trench used to contain, capture, or redirect groundwater flow in the vicinity of an environmental remediation site.

slush grouting Distribution of a grout with or without fine aggregate, as required, over a rock or concrete surface that is subsequently to be covered with concrete. The grouting is usually accomplished by brooming it into place to fill surface voids and fissures.

small box retailer Retail stores under 5,000 square feet.

smart actuator A device that combines control and sensor capabilities.

smart building See **intelligent building**.

smart card A card or device that stores information and processes data to establish secure identification, among other applications.

smart conference room A building space provided with integrated controls for temperature, lighting and sound masking, as well as multimedia technology.

smart escalator An escalator that has controls, such as automatic slowing or stopping of the system when it is not being used. Also referred to as an intermittent escalator.

smart glass Glazing that can adjust for opacity and light and heat transmission.

smart house An automated home that conserves energy by using electronic sensors that regulate the operation of systems including HVAC, lighting, appliances, security, etc.

smart landscaping Sustainable landscape design that may include conservation of water, avoidance of chemical fertilizers and pesticides, enhancement of a property's fire-resistance, and reduction in a building's energy requirements. See also **xeriscaping**.

smart lighting Lighting designed for energy efficiency. May include high efficiency fixtures, daylighting and automatic controls that make adjustments based on conditions such as occupancy.

smart time scheduling A control system for lighting and HVAC based on time settings rather than occupancy sensors.

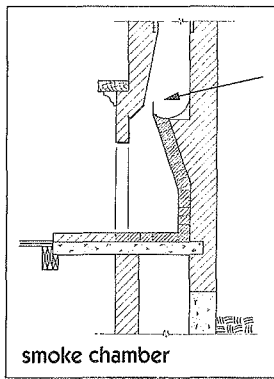
smart window Any window that uses removable coatings or a light-sensitive suspended particle device to allow for greater control of solar gain.

smelting The process of melting a metal, typically in a blast furnace, or fusing it to separate it from impurities.

smoke **1.** A suspension in air of particles that are usually solid. **2.** Carbon or soot particles less than 0.1 micron in size, resulting from incomplete combustion, such as of oil, wood, or coal.

smoke and fire vent A vent cover, installed on a roof, that opens automatically when activated by a heat-sensitive device, such as a fusible link.

smoke chamber The transition portion of a chimney between the fireplace and the flue.



smoke control system A system with components such as dampers, fans, and automatic and manual alarms.

smoke damper A damper arranged to close and stop flow automatically when smoke is detected.

smoke-developed rating A relative number indicating the smoke produced when the surface of a material burns, as measured during an ASTM E119 flame spread test.

smoke door A smoke and fire vent over a stage that opens either automatically or manually by cutting a line.

smoke-dried lumber Lumber seasoned by exposing the material to the heat and smoke from a fire.

smoke hatch See **smoke door**.

smoke shelf A concave shelf at the back of a smoke chamber to redirect downdrafts up the chimney.

smokestop A partition intended to retard the spread of smoke. Any opening in a smokestop should be protected by a door with an automatic closer.

smoke test A test using a nontoxic, visible smoke to determine the routes taken by air currents and/or to detect leaks.

smoke zone or smoke control zone **1.** A building space with compartmentalization and pressurization that can control smoke. **2.** An HVAC zone where smoke is detected.

smooth ashlar A rectangular stone block with smooth faces used in masonry construction.

smoother bar A heavy, rod-like attachment to excavation equipment that breaks up clumps of soil disturbed during excavation operations.

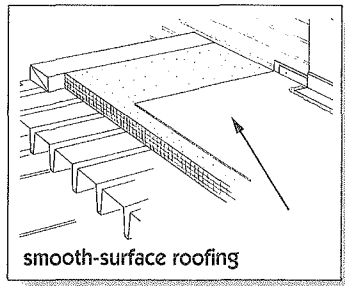
smoothing iron A hand-held, hot iron with a long handle, used for smoothing asphaltic pavement joints.

smoothing plane A small, fine carpenter's plane used for finishing.

smooth-surfaced roofing

S

smooth-surfaced roofing A built-up roofing membrane, the top surface of which is either hot-mopped asphalt, an asphalt emulsion of a cutback coating, or an inorganic top felt.



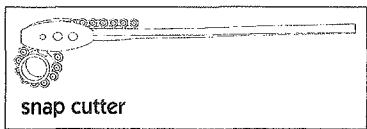
smudge 1. An accidental mark or smear on a surface. 2. A paint primer made from the scraping of paint pots. 3. A mixture of glue and lamp black spread on a surface to prevent adhesion of solder.

snake 1. A long, resilient wire used by electricians in running wires through conduit. The snake is pushed through and then used to pull the wires. 2. A flexible metal wire used to clear clogged plumbing fixtures.

snake hole A hole driven into rock at an angle.

snakeholing Drilling blast holes under a rock or surface.

snap cutter One of a variety of hand tools used to cut tile, cast iron pipe, and fittings.



snap head See buttonhead.

snap header A half bat.

snap line See snapping line.

snapped work Masonry laid using more snap headers than full headers.

snapping line A layout line made by stretching a chalked line across a surface and snapping the line.

snap switch A manually operated switch used to control low-power indoor circuits.

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

snatch block A pulley or block with a side that can be opened to receive a rope or line.

sniffer valve A valve that allows air into a tank or piping system automatically through the use of a mechanical device or by other external means.

snips See tin snips.

snow fence A fence of wood strips connected by wire and used to catch drifting snow.

snow load The live load allowed by local code, used to design roofs in areas subject to snowfall.

snub gable See Dutch hip roof.

soakaway An excavated pit designed to receive excess surface water for gradual draining.

soaker A piece of flashing used on a slate roof at a hip or valley, or at the intersection of a roof and a vertical wall.

soaker hose A garden hose with small holes that allow water to seep into the ground, to the roots of plants, conserving moisture that would be lost to evaporation with sprinkler systems.

soaking period In high-pressure and low-pressure steam curing, the time during which the live steam supply to the kiln or autoclave is shut off and the concrete products are exposed to the residual heat and moisture.

soap A brick or tile of normal face dimensions but with a nominal thickness of 2".

soapstone A soft rock containing a high proportion of talc; used for such items as sinks, bench tops, and carved ornaments.

Society of Fire Protection Engineers

An independent organization that represents fire protection engineering professionals and offers fire protection education.

socket 1. British term for the enlarged end of bell-and-spigot pipe. 2. A mechanical device for supporting a lamp or plug fuse and completing the electric circuit. 3. See coupling.

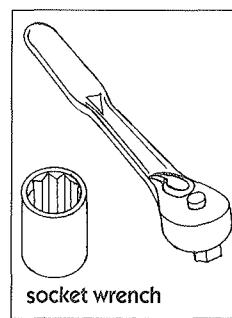
socket fuse See plug fuse.

socketing A connection of two timber pieces by fitting one into a mating cavity in the other.

socket plug A plug for the end of an interior-threaded pipe fitting consisting of a threaded piece with a recess into which a tool is placed to turn it.

socket weld A pipe joint made by use of a socket weld fitting that has a female end or socket for insertion of the pipe to be welded.

socket wrench A box wrench with a recessed socket at the end of a shank that fits over the head of a nut or bolt for tightening or removing the nut or bolt.



sod 1. The upper layer of soil containing grass roots. 2. High quality grass grown commercially for use in landscaping. Laid as a finished lawn.

soda-acid fire extinguisher A fire extinguisher that discharges water under pressure. The pressure is produced by mixing soda and acid to generate carbon dioxide.

sod house A house with walls made of layers of sod. The roof is usually logs covered with earth and sod.

sodium light The orange-yellow light from a low-pressure sodium-vapor lamp.

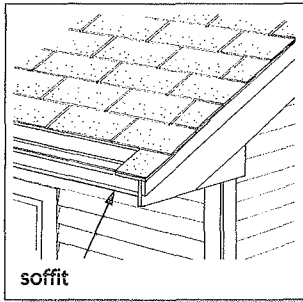
sodium silicate A material that is used to waterproof concrete and mortar, to encapsulate asbestos, and to insulate.

sodium silicate adhesive

A noncombustible, inorganic, high-strength adhesive with unsatisfactory weather resistance.

sodium vapor lamp An electric discharge lamp that produces light when sodium vapor is activated by current passing between two electrodes. Commonly used in street lights, they can take three to four minutes to warm up to full light output.

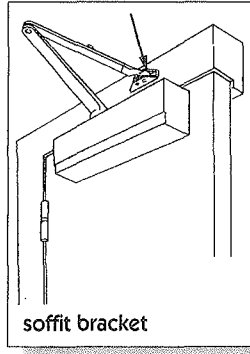
soffit The underside of a part or member of a structure, such as a beam, stairway, or arch.



soffit block A special concrete masonry unit used under a beam and slab concrete floor to conceal the beam soffits and provide a flat ceiling.

soffit board A board that forms the soffit of a cornice.

soffit bracket A bracket used to mount an exposed exterior door closer to a door frame head or transom bar.



softening point The temperature at which bitumen softens or melts; used as an index of fluidity.

soft-face hammer A hammer with an absorbent striking surface, such as one made with plastic or rubber.

soft glass Glass susceptible to thermal shock because it has a high coefficient of thermal expansion and a low softening point.

soft light Dispersed light producing soft shadows.

soft maple *Acer rubrum*, *A. saccarinum*. Red maple and river maple, softer than rock or sugar maple.

soft-mud brick Brick produced by molding, often by hand, relatively wet clay (20% to 30% moisture). When the inside of the mold is sanded to prevent sticking of the clay, the product is sand-struck brick. When the molds are wetted to prevent sticking, the product is water-struck brick.

soft particle An aggregate particle possessing less than an established degree of hardness or strength as determined by a specific testing procedure.

soft rot Decay in wood, where the residue is chiefly cellulose.

soft solder A solder used to join metals in welding and brazing applications. It is typically a mixture of tin and lead,

although soft solder of pure lead is used in some industries to join copper.

soft water Water with a low mineral content. *See also* **hard water**.

softwood **1.** A general term referring to any of a variety of trees having narrow, needle-like or scale-like leaves, usually coniferous. **2.** The wood from such trees. The term has nothing to do with the actual softness of the wood; some softwoods are harder than certain of the hardwood species.

soil A generic term for unconsolidated natural surface material above bedrock.

soil absorption system A disposal system, such as an absorption trench, seepage bog, or seepage pit, that utilizes the soil for subsequent absorption of treated sewage.

soil analysis *See* **mechanical analysis**.

soil binder Soil that just passes through a No. 40 (40 squares per inch) sieve.

soil branch A branch line of a soil pipe.

soil-cement Soil, Portland cement, and water mixed and compacted in place to make a hard surface for sidewalks, pool linings, and reservoirs, or for a base course for roads.

soil class A classification of soil by particle size, 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.

soil classification test A series of tests combined with sensory observations used to classify a soil. The tests may include such aspects as grain size, distribution, plasticity index, liquid limit, and density.

soil cover *See* **ground cover**.

soil creep The slow movement of a mass of soil down a slope, caused by gravity and aggravated by pore water.

soil drain A horizontal soil pipe.

soil flushing

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soil flushing A process that removes soil contaminants from a site by flushing organic and/or inorganic constituents from in situ soils for treatment.

soil hydraulic conductivity A measure of the rate at which water will flow through a soil matrix.

soil mechanics The application of the laws and principles of mechanics and hydraulics to engineering problems dealing with soil as a building material.

soil moisture sensor Device used on farms, golf courses, and commercial building properties with extensive lawns. They turn irrigation water on according to the moisture levels in the soil.

soil pipe A pipe that conveys the discharge from water closets or similar fixtures to the sanitary sewer system.

soil pressure See **contact pressure**.

soil profile A vertical section through a site showing the nature and sequence of layers of soil.

soil sample A representative sample of soil from a specific location or elevation of a construction site, usually extracted to determine bearing capacity.

soil stabilizer **1.** A machine that mixes in-place soil and an added stabilizer, such as cement or lime, in order to stiffen the soil. **2.** A chemical added to soil to stiffen it and increase the stability of a soil mass.

soil stack A vertical soil pipe that carries the discharge from water closet fixtures.

soil structure The pattern in which the soil particles are arranged in the aggregate.

soil survey See **subsurface investigation**.

soil test See **soil classification test**.

soil vapor extraction A process that removes volatile organic compounds from a soil matrix through vacuum extraction of the air in the soil.

solar altitude A vertical measurement, between 0 and 90 degrees, used in solar analysis and design.

solar attic fan A solar-powered fan that exhausts hot air from an attic, thereby reducing the heat entering a home and helping reduce energy used for air conditioning.

solar azimuth A horizontal measurement used for solar analysis and design.

solar cells Components in solar energy collection systems, they come in four basic types: single-crystalline, multi-crystalline, amorphous thin film, and hybrid.

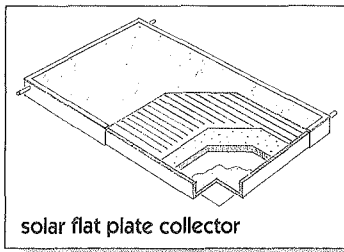
solar collector Any device intended to collect solar radiation and convert it to energy.

solar constant The average rate at which radiation energy from the sun is received at the surface of the earth, equal to 430 Btus per hour per square foot (1.94 cal. per min. per sq. cm.).

solar dryer A wood dryer that uses solar energy to raise the dry-bulb temperature of the air being circulated through the wood.

solar energy The radiant energy from the sun.

solar flat plate collector A solar collector in the shape of a flat plate, consisting either of a series of photovoltaic cells or a sandwich panel made up of a black surface, a film of circulating water or air, and a transparent cover.



solar fraction The percentage of the seasonal heating requirement of a building that is provided by a solar heating system.

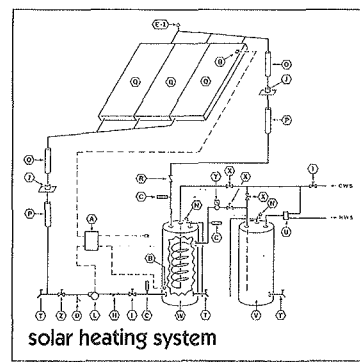
solar gain Heat that enters a building through windows as solar energy. Considered a "passive" heat source, as opposed to those sources that artificially generate heat.

solar heat Heat supplied by radiation from the sun.

solar heat exchanger A means of transferring the heat in storage in a solar heating system to the area to be heated.

solar heat gain coefficient (SHGC) The measure of the solar radiation admitted through a window, including radiation directly transmitted and absorbed and subsequently released inward. See also **shading coefficient**.

solar heating system An assembly of components, including collectors, heat exchangers, piping, storage system, controls, and supplemental heat source, used to provide heat and/or hot water to a building, with the sun as the main source of energy.

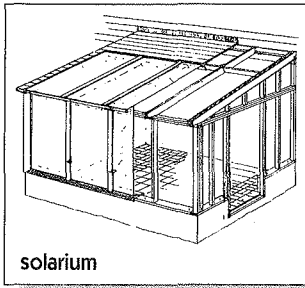


solar hot water system A system that uses a collector, typically mounted on a roof, to absorb heat from sunlight.

solar house A house designed and located so as to use the sun's rays to maximum advantage in heating the house.

solar insolation The amount of solar energy available at a given time in a given area.

solarium A room or porch with a great deal of glass and located for maximum exposure to the sun.



solar orientation The alignment of a building relative to the sun, initially set either for maximum or minimum heat gain, depending on the local climate.

solar panel A flat panel that collects solar energy. A solar panel can be either a thermal collector (which heats air or water) or a photovoltaic module (which generates electricity).

solar path lighting Outdoor light fixtures that contain small solar cells that convert sunlight into electricity, which powers the lights at night.

solar photovoltaic system A system that converts solar energy into electrical energy.

solar pin That part of a building's heat load produced by solar radiation striking the building or passing through windows.

solar pool heater A solar water heating system consisting of a collector (typically mounted on the roof of a home, garage or pool house) and pipes through which water circulates to the solar collector and is warmed by the sun.

solar radiation Energy from the sun, which can be absorbed and converted into heat energy, reflected or transmitted.

solar screen 1. An openwork or louvered panel of a building positioned to act as a sun shade. 2. A perforated wall used as a sun shade.

solar storage Fluid and/or rocks used to hold some of the heat energy collected by a solar heat collector.

solder 1. An alloy, usually lead-tin, with a melting point below 800°F (427°C), used to join metals or seal joints.

2. The process of joining metals or sealing joints using solder and heat.

soldered joint A gas-tight pipe joint made by applying solder to a heated joint.

soldering gun A tool with a pistol grip and a small electrically heated bit that reaches operating temperatures rapidly, used to solder electrical components.

soldering nipple A nipple with one end threaded and the other plain. The plain end is used for a soldered joint and the threaded end for a mechanical joint.

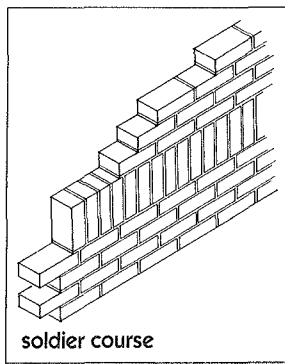
solderless connector See **pressure connector**.

soldier 1. A vertical wale used to strengthen or align formwork or excavations. 2. A masonry unit set on end so its long, narrow face is vertical on the face of the wall.

soldier arch A flat, brick arch in which the stretchers are set vertically.

soldier beam A rolled-steel section driven into the ground to support a horizontally sheeted earth bank.

soldier course A course of brick units set on end with the long, narrow face vertical on the wall face.



soldier pile 1. In an excavation, a vertical member that supports horizontal sheeting and is supported by struts across the excavation and by embedment below the excavation.

2. A vertical member used to support formwork and held in place by struts, bolts, or wires. See also **soldier**.

sole 1. See **solepiece** (1.). 2. See **soleplate** (2.).

solenoid An electromagnetic coil used to activate a mechanical device or switch.

solenoid valve A valve opened by a plunger in which movement is controlled by an electromagnet.

solepiece 1. Any horizontal member used to distribute the loads from one or more uprights or struts. 2. A member that supports the foot of a raking shore.

soleplate 1. A solepiece or shoe that serves as a base for studs in a core of solid wood or mineral composition, as opposed to a partition. 2. A plate welded or bolted to the underside of a plate girder that bears on a pad. 3. A sill.

sole proprietorship A business that is owned and controlled by one person. A proprietorship may or may not have employees.

solid brick A brick meeting the specifications for a solid masonry unit.

solid bridging See **block bridging**.

solid core 1. The inner layers of a plywood panel that contain no open irregularities, such as gaps or open knotholes, and in which the grain runs perpendicular to the outer plies. Solid core is primarily used as underlayment for resilient floor covering. 2. A flush door, used in entries and as fire-resistant doors in which particleboard or wood blocks completely fill the area between the door skins.

solid-core door A door having a core of solid wood or mineral composition.

solid cross (X) band

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solid cross (X) band A cross band in plywood consisting of plugged veneer allowing limited open defects or splits. The term is no longer used by softwood plywood manufacturers, who have substituted plugged inner plies or plugged crossbands as a more accurate description.

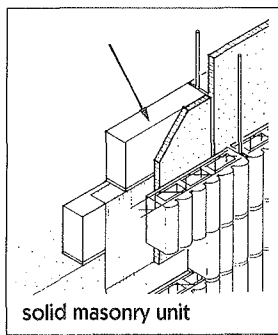
solid door See **solid-core door**.

solid frame The frame of a door or window having jambs, head, and sill made of solid pieces of timber rather than parts.

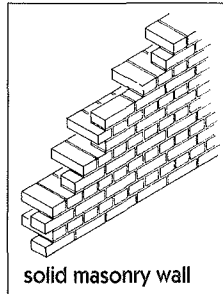
solid glass door A door in which the glass essentially provides all the structural strength.

solid loading Filling a drill hole with explosive, except for a stemming space at the top.

solid masonry unit **1.** A masonry unit whose minimum net cross-sectional area parallel to its bearing surface is 75% or more of its gross cross-sectional area. **2.** A masonry unit having holes less than 3/4" (2 cm) wide or less than 0.75 sq in (5 sq cm) passing through, or having frogs that do not exceed 20% of its volume. In either type, up to three handling holes, not exceeding 5 sq in (32.5 sq cm) each, are allowed. The total area of all through holes may not exceed 25% of the gross area.



solid masonry wall A wall built of solid masonry units with all joints filled with mortar and no hollow wythes.



solid modeling The most complete type of geometric modeling used in computer aided design. Solid models are three-dimensional and can include far more engineering data than two-dimensional drawings. See also **wireframe modeling**.

solid molding A molding produced from a single piece of wood, as distinguished from finger-jointed moldings produced from two or more pieces of wood joined together end to end.

solid mopping The application of hot asphalt over an entire roof surface.

solid panel A solid slab, usually of constant thickness.

solid partition A partition with no cavity.

solid plasterwork Solid core plaster formed in place.

solid punch A steel rod used to drive bolts out of holes.

solid rock Rock that cannot be moved or processed without being blasted.

solids That part of paint, varnish, or lacquer that does not evaporate but stays on the surface to form the film.

solids content **1.** The portion of a protective coating material that remains on the surface after drying. Sometimes referred to as non-volatiles. **2.** In an adhesive, the percentage of weight of the nonvolatile matter.

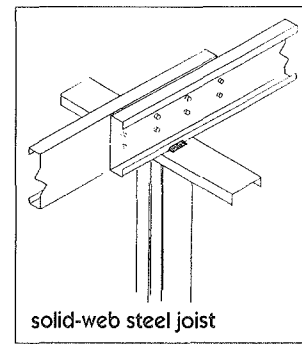
solid-state welding A welding process in which coalescence takes place at temperatures below the melting point of the metals being joined and without use of a brazing filler metal. Sometimes

this is accomplished through the use of pressure.

solid wall A wall of solid concrete. See also **solid masonry wall**.

Solid Waste Disposal Act A predecessor law to the federal Resource Conservation and Recovery Act, which regulated solid and hazardous waste management.

solid-web steel joist A steel truss or light beam having a solid web; usually cold-formed from sheet steel and having a channel shape.



solution A liquid solvent in which one or more substances are dissolved.

solvent A liquid in which another substance may be dissolved.

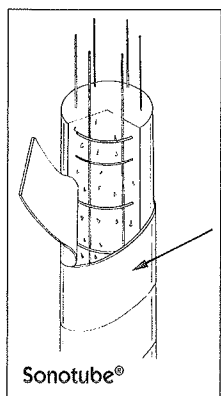
solvent adhesive An adhesive having a volatile organic liquid as a vehicle.

solvent extraction An ex situ remediation process in which contaminated sediment, soil or sludge is mixed with a solvent to separate the contaminant from its existing matrix.

solvent welding A process where a chemical liquid solvent is used to soften and join together two or more thermoplastic materials.

sonic pile driver **1.** A vibrating pile-driving hammer. Puts a pile into its resonant vibration range, causing it to slide down into the soil. **2.** A machine used to drive piles or sheet piling into soil using a head vibrated at a high frequency, usually less than 6,000 times per minute.

Sonotube® A product consisting of a preformed casing made of laminated, waxed paper; used to form cylindrical piers or columns.



soot door An access door to a flue for cleaning or repairing the flue.

soot pocket A place at the foot of a chimney where soot collects; usually fitted with a door so the soot can be removed easily.

sound **1.** A vibratory disturbance, with the frequency in the approximate range between 20 to 20,000 cycles per second, capable of being detected by a human ear. **2.** Wave motion in the air.

sound absorption **1.** The process of dissipating sound energy. **2.** The measure of the absorptive ability of a material or object, expressed in sabins or metric sabins.

sound attenuating door See sound-rated door.

sound attenuation Measures taken to soundproof a wall or sub-floor.

sound attenuation batt
Insulation designed to reduce noise transmission.

sound attenuation fire batt (SAFB)
Insulation that provides acoustical and thermal control, as well as fire resistance.

sound attenuator An assembly installed in a duct system to absorb sound.

sound damping The use of fibrous sound-absorbing material in a partition to reduce sound transmission. Damping in floor/ceiling construction has a wider application for impact sound than for airborne sound.

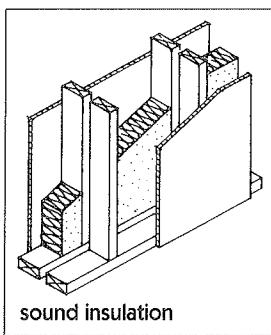
sound deadening board A board with good sound absorption qualities; used in sound-control.

sound door See sound-rated door.

sounding well A vertical conduit used to determine the elevation of grout being placed in preplaced aggregate concrete.

sound-insulating glass A glazing unit consisting of two or more lights fixed in resilient mountings and sealed to provide one or more dead air spaces.

sound insulation (acoustic insulation)
1. The use of materials and assemblies to reduce sound transmission from one area to another or within an area. **2.** The degree to which sound transmission is reduced.



sound isolation Attenuating sound transmission between adjacent spaces. In schools, sound isolation is particularly important between classrooms and areas of varying purposes, and in construction that uses gypsum wallboard and metal stud classroom walls.

sound knot A dead knot in wood that is undecayed, at least as hard as the surrounding wood, and held firmly in place.

sound leak Opening in a partition that allows air (and sound) to pass through. Examples include small holes in a wall, openings for electrical boxes and plumbing, and cracks around doors.

sound level The reading of a sound level meter, expressed in decibels and based on one of three weighting networks: A, B, or C.

sound masking Provision of white noise to provide privacy or reduce distractions.

soundness The freedom of a solid from cracks, flaws, fissures, or variations from an accepted standard. In the case of cement, soundness is freedom from excessive volume change after setting. In the case of aggregate, soundness is the ability to withstand the aggressive action to which concrete containing it might be exposed, particularly that action due to weather.

sound pressure The change in pressure resulting from vibration in the audible frequency range. Conversational speech at close range produces a sound pressure of about one dyne per sq cm.

sound pressure level (SPL)

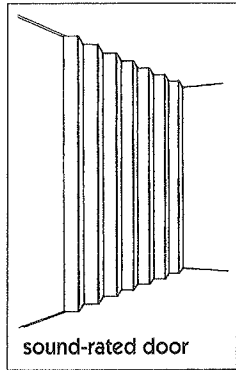
Expressed in decibels, the SPL is 20 times the logarithm to the base 10 of the ratio of the sound pressure to a reference pressure of 20 micropascals. See also decibel.

soundproofing **1.** The design and construction of a building or unit to reduce sound transmission. **2.** The materials and assemblies used in a building or unit to reduce sound transmission.

sound-rated door

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sound-rated door A door constructed to provide greater sound attenuation than that provided by a normal door; usually carrying a rating in terms of its sound transmission class (STC).



sound reduction factor The effectiveness, measured in decibels, that a building assembly exhibits at lessening the intensity of sound.

sound transmission The passage of sound from one point to another, as from one room to another, or from a street to a room within a building.

sound transmission class (STC) A single number indicating the sound insulation value of a partition, floor-ceiling assembly, door, or window, as derived from a curve of insulation value as a function of frequency. The higher the number is, the greater the insulation value.

sound transmission loss The reduction in sound when it passes through a partition, wall, or ceiling.

sound trap See **sound attenuator**.

southern pine See **southern yellow pine**.

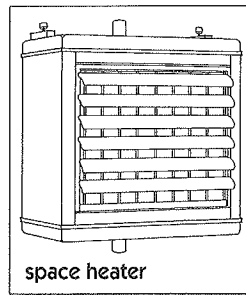
southern red cedar *Juniperus silicicola*. A species similar to eastern red cedar and found in wet lowlands and swampy areas along the southern Atlantic and Gulf coasts.

southern yellow pine A species group composed primarily of loblolly, longleaf, shortleaf, and slash pines. Various subspecies also are included

in the group. The southern yellow pine region refers to the southeastern United States, from Texas to Virginia.

space frame Any three-dimensional structural frame capable of transmitting loads in the three dimensions to supports. A space frame is usually an interconnected system of trusses or rigid frames.

space heater A small heating unit, usually equipped with a fan, intended to supply heat to a room or portion of a room. The source of heat energy may be electricity or a fluid fuel.



space planning The process and act of laying out and designing space for a tenant's needs.

spacer **1.** A device that maintains reinforcement in proper position, or keeps wall forms a given distance apart before and during concreting. **2.** A small block of wood or other material placed during installation on the edges of a pane of glass to center it in the channel and maintain uniform width of sealant beads to prevent excessive sealant distortion. See also **spreader**.

spacing criterion The maximum distance between interior light fixtures that will ensure a uniform illumination on a work plane.

spacing factor (power spacing factor) An index related to the maximum distance of any point in a cement paste or in the cement paste fraction of mortar or concrete from the periphery of an air void.

spackle (speckling, sparkling) A paste, or a dry mixture blended with water to form a paste; used to fill holes and cracks in plaster, wallboard, or wood.

spade A sturdy digging tool having a thick handle and a flat blade that can be pressed into the ground with a foot.

spading Consolidating mortar or concrete by repeatedly inserting and withdrawing a flat, spade-like tool.

spall A fragment usually in the shape of a flake, detached from a larger mass by a *blow* through the action of weather, by pressure, or by expansion within the larger mass. A small spall involves a roughly circular depression not greater than 20 mm in depth nor 150 mm in any dimension; a large spall may be roughly circular or oval or, in some cases, elongated.

spalling The development of spalls.

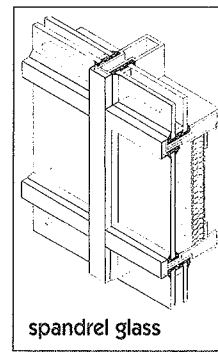
span The horizontal distance between supports.

spandrel (spandril) That part of a wall between the head of a window and the sill of the window above it.

spandrel beam A beam in the perimeter of a building spanning columns, and usually supporting floor or roof loads.

spandrel frame A triangular-shaped frame.

spandrel glass Opaque glass used in curtain wall construction to conceal structural elements.



spandrel wall The area of a curtain wall between the sill of one window and the top of a window one story below.

Spanish tile See *mission tile*.

span length See *effective span*.

spanner **1.** A horizontal cross brace. **2.** A collar beam.

span roof A pitched roof with the same slope on either side.

spar **1.** A common rafter. **2.** A heavy, round timber. **3.** A bar used as a gate latch. See also *common rafter*.

sparge pipe A perforated pipe used to distribute flushing water for a urinal.

spark arrester (bonnet) A device at the top of a chimney or stack to catch sparks, embers, or other ignited material over a given size. See also *arrester*.

sparrow peck **1.** A texture given to finish plaster by dabbing it with a stiff brush. **2.** A texture given to stone by pitting it with a pick.

spar varnish A varnish with superior weather-resisting qualities; used on exterior wood.

spat A protective sheet, usually stainless steel, installed at the bottom of a door frame.

spatter dash (spatterdash) A rich mixture of Portland cement and coarse sand, thrown onto a background by a trowel, scoop, or other appliance so as to form a thin, coarse-textured, continuous coating. As a preliminary treatment, before rendering, it assists bonding of the undercoat to the background, improves resistance to rain penetration, and eases out the suction of variable backgrounds. See also *parge and dash-bond coat*.

spec Abbreviation for "on speculation," used when a building is constructed before a buyer or tenant is obtained.

special assessment A charge imposed by a government on a particular class of properties to defray the cost of a specific improvement or service; presumably of benefit to the public but of special benefit to the owners of the charged properties.

special conditions An additional governmentally imposed charge designed to pay for a specific improvement or service.

special hazards insurance Insurance coverage for damage such as sprinkler leakage, water damage, collapse, and coverage for materials in transit (or off-site). The damage must be caused by additional perils and risks not covered in standard property insurance. See also *property insurance*.

special matrix terrazzo A finish flooring consisting of colored aggregate and organic matrix.

special-purpose industrial occupancy Industrial occupancy for particular operations characterized by a relatively low density of employee population, with much of the area occupied by machinery or equipment. Hazardous usage is excluded.

special-quality brick A brick that is durable when used under conditions of exposure.

specialty drawings Graphic representations of the unique requirements of various spaces' special uses (such as kitchens, libraries, retail spaces, and home theater systems). Specialty drawings outline the coordination among other building systems, most commonly the mechanical and electrical systems.

special use permit Permission granted to a landowner to use property in a way that would not normally be allowed in a zoning district.

species A category of biological classification. A species is a class of individuals having common attributes and designated by a common name. *Species* is always properly used with the "s" when referring to trees or other biological classifications; *specie* refers only to money in coin.

specific adhesion A bond created by chemical means, rather than mechanical.

specification A detailed and exact statement of particulars, especially a statement prescribing materials, dimensions, and workmanship for something to be built or installed.

specifications or specs Documents that define the qualitative requirements for products, materials, and workmanship upon which the contract for construction is based.

specific gravity **1.** The ratio of the mass of a unit volume of a material at a stated temperature to the mass of the same volume of gas-free distilled water at a stated temperature. **2.** The ratio of the density of one substance to another when used as the standard. Water is the standard for determining specific gravity of solids and liquids; hydrogen is used for gases.

specific gravity, apparent The ratio of the mass in air of a unit volume of a material at a stated temperature to the mass in air of equal density of an equal volume of gas-free distilled water at a stated temperature. If the material is a solid, the volume is that of the impermeable portion.

specific gravity, bulk

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specific gravity, bulk The ratio of the mass in air of a unit volume of a permeable material, including both permeable and impermeable voids normal to the material, at a stated temperature to the mass in air of equal density of an equal volume of gas-free distilled water at a stated temperature. Saturated-surface-dry basis bulk specific gravity is the same as bulk specific gravity except that the mass includes the water in the permeable voids.

specific gravity factor The ratio of the weight of aggregates, including all moisture, as introduced into the mixer to the effective volume displaced by the aggregates.

specific heat A quantity that describes the ability of a body to absorb heat and increase its temperature. The specific heat of a substance is the ratio of the amount of heat that must be added to a unit mass to raise its temperature through one degree to the amount of heat that is required to raise the temperature of an equal mass of water one degree.

specific retention The ratio of the volume of water retained by rock or soil to the gross volume of rock or soil, after the sample has been saturated and drip-drained.

specific surface The surface area of the contained particles in a unit weight of material.

specific volume The volume of a given weight of a material, typically a gas, expressed as cubic feet per pound at specific conditions. Simply put, the reciprocal of density.

specific yield The ratio of the volume of water obtained by draining a sample of saturated rock or soil to the gross volume of the sample.

specifier One who writes or prepares specifications.

specs Contraction of specifications.

spectral power distribution
The distribution of radiant power, usually expressed in watts

per nanometer, with respect to wavelength.

spectrophotometer An instrument for measuring the intensity of radiant energy of desired frequencies absorbed by atoms of molecules. Substances are analyzed by converting the absorbed energy to electrical signals, proportional to the intensity of radiation.

speculative builder A contractor who develops, constructs, and then sells (or leases) a property.

speed square A triangular-shaped tool used to mark perpendicular and angled lines.

spigot **1.** The end of a pipe that fits into the bell, or upset, end of another pipe to form a joint after caulking. **2.** A faucet.

spigot joint See bell-and-spigot joint.

spike A heavy nail, sometimes having a square cross section, and 3" to 12" (7.6 to 30.5 cm) long.

spike-and-ferrule insulation A type of gutter installation in which the gutter is secured by long nails in metal sleeves.

spiked-and-linked chain An iron chain consisting of spikes linked with a length of chain and attached to posts to enclose a planted area.

spiked grill fastener A multi-tooth connector made of steel that is used to fasten heavy timbers. Commonly used in roof truss and flooring construction.

spile **1.** A peg or plug of wood. **2.** A spout for directing the flow of sap from sugar maples. **3.** A heavy wooden stake.

spillway A passage to convey overflow water from a dam or similar structure.

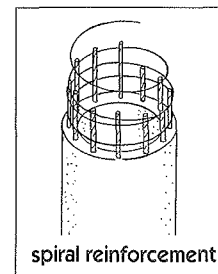
spindle **1.** A small axle on which an object turns. **2.** The bar in a lock that connects the knob(s) or handle(s) with the latching mechanism. **3.** A short, turned-wood part, such as a baluster.

spiral A continuously wound length of reinforcing steel in the form of a cylindrical helix.

spirally reinforced column A column in which the vertical bars are enveloped by spiral reinforcement, (i.e., closely spaced, continuous hooping).

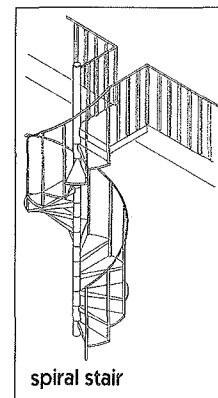
spiral ratchet screwdriver A screwdriver with a ratchet stem and a spring-loaded handle that permits a screw to be driven or withdrawn by pushing on the handle.

spiral reinforcement
Continuously wound reinforcement in the form of a cylindrical helix.



spiral spacer Reinforcement that keeps spirals a uniform distance apart.

spiral stair A flight of stairs whose treads wind around a central newel in a spiral or helix shape. See also circular stair.



spire Any long, slender, pointed construction on top of a building.

A spire is often a narrow, octagonal pyramid set on a short, square tower.

spirit level A device used to set an instrument to true horizontal or true vertical, consisting of a glass tube nearly filled with liquid so a traveling air bubble is formed. Cheap levels are bent concave; better levels are ground internally to an overall concave shape.

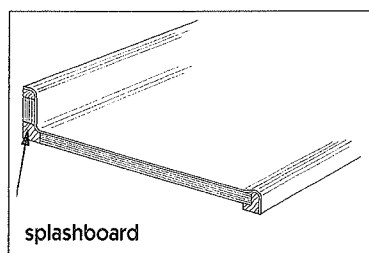
spirit stain An alcohol-soluble dye with good penetrating properties; used to stain wood.

spirit varnish A varnish with a highly volatile liquid as the solvent for the oil or resin.

spit The depth of one hand-shovel blade.

splash block A small masonry block set in the ground beneath a rain gutter to receive roof drainage and prevent puddling or soil erosion.

splashboard **1.** A board placed on a wall at a sink to protect the wall. **2.** A weather molding placed on the bottom of an outside door. **3.** A board set against a wall at a scaffold to protect the wall.



splash brush A brush used to apply water to a finish coat of plaster while it is being troweled smooth.

splash lap That part of the overlap of a seam in sheet-metal roofing that extends onto the flat surface of the next sheet.

splash shield A metal shield placed between a fire pump and the electric motor drive to prevent water drainage during operation.

splay **1.** To form with an oblique angle, or to bevel. **2.** To spread out or extend.

splay brick (cant brick) A brick with one side beveled at about 45°.

splayed edge A bevel across the full thickness of a piece of wood.

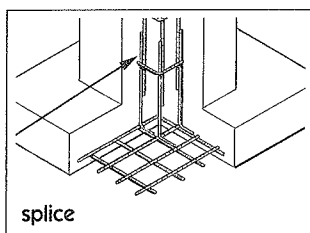
splayed hangers Hangers installed at an angle rather than perpendicular to a support grid or channel.

splayed heading joint A joint between the ends of two adjacent floor boards. Their ends are cut at an angle of 45°, rather than 90° in a butt joint.

splayed joint A joint between the ends of two adjacent members in which the ends of each are beveled to form an overlap.

splayed window Any window set in a wall at an irregular angle.

splice Connection of two similar materials to another by lapping, welding, gluing, mechanical couplers, or other means.



splice plate A plate laid over a joint and fastened to the pieces being joined to provide stiffness.

spline (false tongue, feather, slip feather, slip tongue) A piece of metal or wood used to join two pieces of wood, such as decking, together.

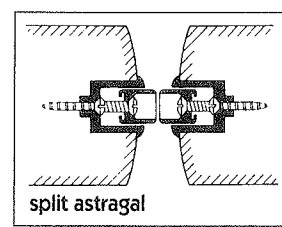
spline joint A joint formed by inserting a spline into slots formed in the two pieces to be joined.

splinter **1.** A small, thin, sharp piece of wood broken from a larger piece. **2.** To split or break something into splinters.

split **1.** A crack extending completely through a piece of wood or veneer.

2. A tear in a built-up membrane resulting from tensile stresses. **3.** A masonry unit one-half the height of a standard unit.

split astragal Two pieces of molding attached to the meeting edges of two leaves of a pair of swinging doors, allowing both leaves to be active.



split-batch charging A method of charging a mixer in which the solid ingredients do not all enter the mixer together. Cement or different sizes of aggregate may be added separately.

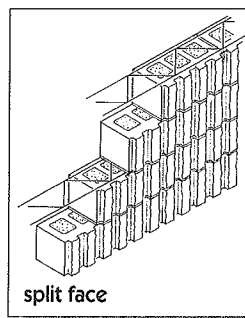
split block See split-face block.

split-bolt connector A device that holds electrical wires in close contact with a simple assembly. Wires are fed through the device and held in place by a nut tightened on a threaded shaft.

split-conductor cable A cable in which each conductor consists of two or more insulated wires normally in parallel.

split course A course made of bricks cut so they are of less than normal thickness.

split face An exposed, rough face of a masonry unit or stone created by splitting rather than forming or sawing the face.



split-face block

S

split-face block Concrete masonry units with one or more faces produced by purposeful fracturing of the unit to provide architectural effects in masonry wall construction.

split-face finish A rough-faced, building stone cut from stratified rock so that the split face exposes the bedding. Usually the stone is cut so the bedding is set horizontally, but sometimes the cut is made to set the bedding vertically.

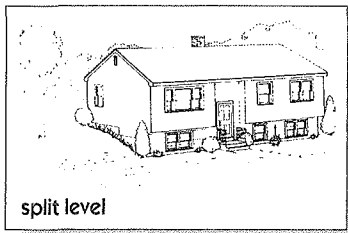
split fitting A section of electric conduit that is split longitudinally. After conductors have been placed in one half, the unit is assembled and secured with screws.

split frame (split jamb) A door frame with the jambs split in two or more pieces to allow the use of a pocket-type sliding door.

split hanger A two-piece pipe hanger that is tightened around a pipe.

split jamb A two-piece doorjamb that can be adjusted to accommodate varying wall thicknesses.

split level A type of house in which the floor levels on one side of the house are one-half story above or below those on the other side.



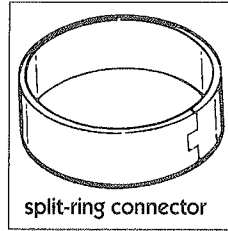
split level

split phase motor An induction motor that typically has two windings, a main and an auxiliary. While noisier, more expensive, and harder to start than three-phase motors, single-phase motors are excellent for medium duty applications and where stops and starts are somewhat frequent.

split pin A pin or spike that spreads during insertion, or that can be split after insertion.

split ribbed block Concrete masonry units featuring a ribbed face with ribs that have been slit off, providing a rough texture.

split-ring connector A timber connector consisting of a metal ring set in circular grooves in two pieces; the assembly being held by bolts.



split-ring connector

split-spoon sampler A sampling device used to collect soil samples during well drilling.

splitter damper A single blade damper hinged at one end, installed to divert air from a main duct into a branch duct.

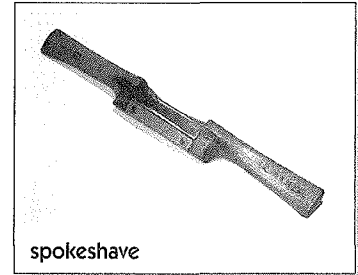
splitting tensile strength Tensile strength of concrete determined by a splitting tensile test.

splitting tensile test (diametral compression test) A test for tensile strength in which a cylindrical specimen is loaded to failure in diametral compression applied along the entire length.

spoil Dirt or rock excavated and removed from its original location but not used for embankment or fill.

spoil area A site where excavated material is to be dumped.

spokeshave A carpenter's tool for shaping curved edges, consisting of two handles and used as a drawing knife or planing tool.



spokeshave

sponge rubber Expanded rubber having interconnected cells, used as a resilient padding and as thermal insulation.

sponsor Any person or institution representing the owner. *See also owner.*

spoon **1.** A small, steel plasterer's tool used in finishing moldings. **2.** A recovery tool used in soil sampling.

spoon bit *See* dowel bit.

spot In gypsum construction, to treat fastener heads with joint compound material. As the fastener sets below the surface of the board, an indentation is formed, allowing a recess, which is filled by spotting.

spot board *See* mortarboard.

spot elevation A point on a map or plan with its existing or proposed elevation noted.

spot ground A piece of wood attached to a plaster base and used as a gauge for thickness of applied plaster.

spotlighting A small area of illumination used to emphasize a specific aspect of a scene.

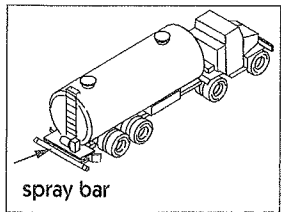
spotter **1.** The person who directs a truck driver into a loading or unloading position. **2.** The horizontal framework between the machinery deck of a pile driver and the leads.

spotting **1.** Directing trucks for loading or unloading. **2.** Spots of adhesive material used to fasten a veneer to its backing. **3.** A defect in a painted surface consisting of spots of a different color, shade, or gloss than the rest.

spot-weld A small circular weld between two metal pieces made by applying heat and pressure.

spout A short tube used to direct water from gutters, balconies, etc., so the water will run down the building wall.

spray bar A pipe with ports used to apply liquid asphalt to a road surface.



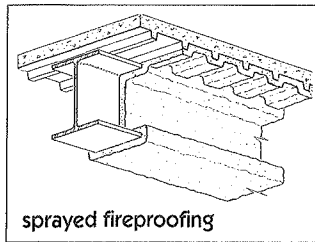
spray booth An enclosed or partly enclosed area used for the spray-painting of objects, usually equipped with a waterfall system to catch overspray and/or a filtered air supply and exhaust system.

spray drying A method of evaporating the liquid from a solution by spraying it into a heated gas.

sprayed acoustical plaster An acoustical plaster applied with a special spray gun. The plaster usually has a rough surface and may be perforated with hand tools before hardening.

sprayed asbestos A fire-resistive and sound-absorbing coating of asbestos fibers and an adhesive, applied to surfaces with a spray gun. Sprayed asbestos is no longer used in the U.S.

sprayed fireproofing An insulating material sprayed directly onto structural members with or without wire mesh reinforcing to provide a fire endurance rating.



sprayed insulation See spray-on insulation.

sprayed mortar See shotcrete.

spray-in-place insulation An insulating material applied with a gun or sprayer to surfaces or cavities. Examples include loose cellulose fiberfill and polyurethane foam.

spray-on insulation Any of a number of lightweight concrete materials or mineral fibers and adhesives applied to surfaces and/or structural members for fire resistance, thermal insulation, or acoustic absorption.

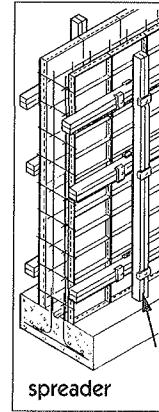
spray painting Applying paint, lacquer, or a similar material with a special tool activated by air pressure.

spray pond A component of a cooling system that cools water for use by forcing it upward through spray nozzles and collecting it in a pool.

spread **1.** Mobile power equipment, such as a paving spread or earth-moving spread, under the direction of a superintendent. **2.** Same as range; the difference between prices or bids.

spreader **1.** A piece of wood or metal used to hold the sides of a form apart until the concrete is placed. **2.** A brace between two wales. **3.** A device for spreading gravel or crushed stone for a pavement base course. **4.** A stiffening member used to keep door or window frames in proper alignment during

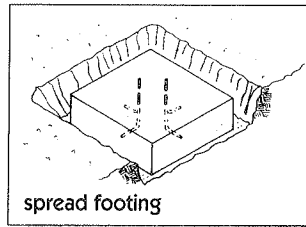
shipment and installation. **5.** An additive that increases the surface area over which a given volume of liquid will spread when poured on a solid or other liquid.



spreader bar A temporary member at the base of a preassembled door frame to maintain alignment during shipment and installation.

spreader box A piece of heavy construction equipment that connects to the back of a vehicle and spreads rock, asphalt, concrete, or other materials.

spread footing A generally rectangular prism of concrete, larger in lateral dimensions than the column or wall it supports; used to distribute the load of a column or wall to the subgrade.



spreading rate **1.** The number of square yards of surface covered by a gallon of paint. **2.** The rate at which bitumen or other material is applied to the surface of a roof.

spread-of-flame test

S

spread-of-flame test A fire test for roof coverings in which a specified flame source is applied to a sample while a specified air stream is directed at the sample. The sample may be mounted horizontally or at an angle, depending on the intended end use of the product.

spreadsheet Large, wide sheet with many columns that is used to tabulate all estimates and sub-bids when putting a bid together. *See also* bid assembly.

spring **1.** An elastic body or shape, such as a spirally wound metal coil, that stores energy by distorting and imparts that energy when it returns to its original shape. **2.** The line or surface from which an arch rises.

spring-bolt (cabinet lock) A spring-loaded, beveled bolt that self-latches when a door or drawer is closed.

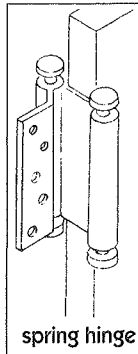
spring brace Temporary brace used to adjust wood frame walls for straightness and plumb.

spring buffer An assembly containing a spring that is designed to absorb and dissipate kinetic energy, such as that from a descending elevator car or counterweight.

spring clamp Any clamp with pressure exerted by a spring. One variety is used to hold parts during gluing; another is used as a temporary electric connection.

springer (skewback, summer) **1.** The stone from which an arch springs. **2.** The bottom stone of the coping of a gable. **3.** The rib of a groined vault.

spring hinge A hinge with one or more springs mounted in its barrel to return a door to the closed position. The hinge may be single-acting or double-acting for a swing door.



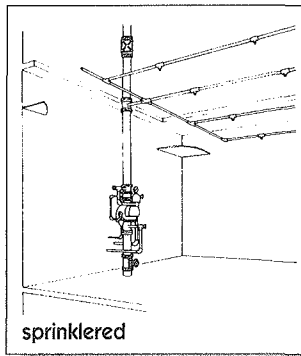
springing (spring) **1.** The support point from which an arch rises. **2.** The initial angle of rise of an arch.

springing line The horizontal line connecting the points from which an arch or arches rise.

spring washer *See* lock washer.

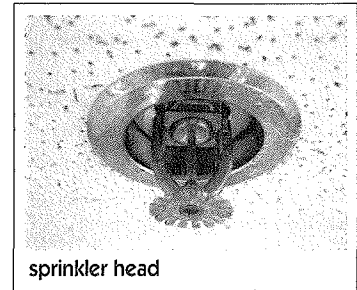
springwood Wood that grows during the early part of a tree's annual growth period. Its thin, large cells make it weaker than summerwood.

sprinklered Said of an area of a building that is protected from fire by an automatic sprinkler system.



sprinkler flow switch A fire sprinkler line sensor that detects water flow and notifies the fire alarm control panel.

sprinkler head A distribution nozzle used in a fire-protection sprinkler system. The head may be closed by a plug held in place by a heat-sensitive device.



sprinkler system *See* fire-protection sprinkler system.

sprocked eaves Eaves having been raised by a sprocket.

sprocket (cocking piece) A wedge-shaped piece of wood attached to the upper side of a rafter at the eave to form a break in the roofline.

spruce *Picea species*. Yellow to reddish-white wood, usually straight-grained, light, and soft.

spruce fir *See* red spruce.

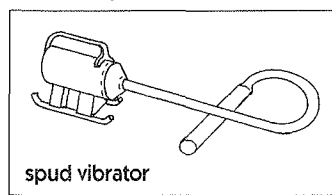
spruce pine *Pinus guba*. A minor pine species found in the South bearing a close resemblance to spruce. The wood is considerably weaker than the major southern yellow pine species. Lumber from this species must be stamped spruce pine.

spruce-pine-fir (SPF) Canadian woods of similar characteristics that have been grouped for production and marketing. The SPF species have moderate strength, are worked easily, take paint readily, and hold nails well. They are white to pale yellow. The largest volume comes from western Canada (British Columbia and Alberta), where the principal species in the group are white spruce, Engelmann spruce, lodgepole pine, and alpine fir. The principal species in the group originating in eastern Canada are white spruce, black spruce, jack pine, and balsam fir. Some lumber production in the New England states also is marketed as spruce-pine-fir and includes these species.

sprung molding A molding that has its interior corner beveled off to better fit a right-angle joint.

spud **1.** A hand tool used to strip bark from logs. **2.** A sharp, narrow bar or spade used for removing gravel and roofing from a built-up roof.

spud vibrator A vibrator used for consolidating concrete, having a vibrating casing or head that is inserted into freshly placed concrete.



spud wrench A tool, used by ironworkers to align holes and tighten bolts, that has a long, tapering steel handle with an open-end wrench on one end.

spun concrete Concrete compacted by centrifugal action, such as in the manufacture of pipes and utility poles.

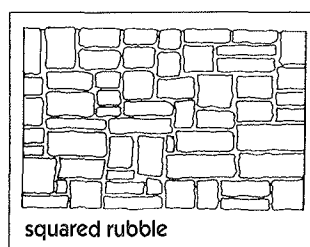
spun lining The smooth bituminous lining in a corrugated metal pipe formed by spinning the pipe around its axis.

spur **1.** An appendage to a supporting member such as a buttress, shore, or prop. **2.** A decorative stone base that makes the transition from a round column to a square or polygonal plinth. **3.** A carpenter's tool with a sharp point used for cutting veneer. **4.** A rock ridge left projecting from a side wall after a blast. **5.** A short length of railroad track; usually parallel to a main track and used for loading, unloading, or storage.

square **1.** A quantity of shingles, shakes, or other roofing or siding materials sufficient to cover 100 square feet when applied in a standard manner; the basic sales units of shingles and shakes. **2.** See **carpenter's square**.

square bolt A door bolt with a square cross section.

squared rubble Wall construction using various-sized, square stones to make patterns.



square edge In context of acoustical tile, a square-edge is not beveled and creates a hairline joint when installed. Drywall panels also may have square edges, although they are typically tapered.

square-framed Joinery framing with all angles of stiles, rails, and mountings cut square.

square-headed Being cut off at right angles at the top, such as a doorway with a horizontal lintel as opposed to an arched opening.

square roof A roof with two sloping surfaces, each at an angle of 45° from the horizontal.

square staff A narrow wood strip used as an angle bead for plastering.

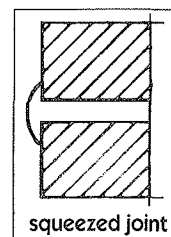
square up To trim a timber or piece of wood, using a plane, so that its cross section is rectangular.

squaring Aligning or constructing an item or assembly so that all angles are 90°.

squatter's right The right to acquire the ownership of land through long-continued occupancy.

squeegee **1.** Window cleaning tool. **2.** Fine gravel installed for grading a floor (prior to placement of concrete).

squeezed joint A joint formed by coating surfaces of two pieces with cement and squeezing them together.



squinch A small arch built across an interior corner of a room to support a superimposed load, such as a dome or the spire of a tower.

squint A small oblique opening in an interior wall of a medieval church to allow a view of the high altar from the aisles.

stab To roughen bricks in preparation for a plaster coat.

stability A measure of the ability of a structure to withstand overturning, sliding, buckling, or collapsing.

stabilization Temporary structural and weather protection used to maintain the essential form and structural integrity of the existing property before restoration begins.

stabilizer A substance that makes a solution or suspension more stable, usually keeping particles from precipitating.

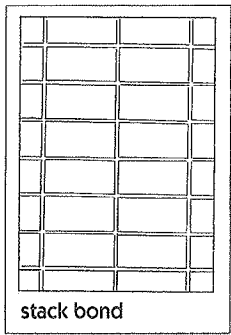
stachybotrys A greenish-black, potentially hazardous mold found on cellulose products (such as wood or paper) that have remained wet for several days or longer.

stack **1.** A chimney. **2.** A vertical structure containing one or more flues for the discharge of hot gas. **3.** A vertical supply duct in a warm, air-heating system. **4.** Any vertical plumbing pipe, such as soil pipe, waste pipe, vent, or leader pipe. **5.** A collection of vertical plumbing pipes. **6.** A tier of shelves for books. **7.** To place trusses on framed walls where they will be installed.

stack bond

S

stack bond (stacked bond) A masonry pattern bond in which all vertical and horizontal joints are continuous and aligned.



stack cap See chimney cap.

stack effect See chimney effect.

stackhead A vertical duct that discharges exhaust air into the atmosphere at high velocity.

stack vent **1.** The extension of a soil or waste stack above the highest horizontal drain or fixture connected to the stack. **2.** A device installed through a built-up roof covering to allow entrapped water vapor to escape from the insulation.

stack venting A method of venting a single fixture connected directly into a soil or waste stack. The term is applicable only to the top fixture or fixtures of a stack.

stadia rod (stadia) A graduated surveyor's rod used with a transit or similar instrument to determine distances. An observed intercept on the rod, as defined by two lines in the reticle of a telescope, is converted into the distance between the instrument and the rod by use of *similar triangles*.

staff angle See angle bead.

staff bead A thick exterior molding placed between a door or window and a masonry wall.

staff man (rodman) A person who sets the leveling rod for a surveyor in leveling or stadia work.

stage grouting Sequential grouting of a hole in separate steps or stages, in lieu of grouting the entire length at once.

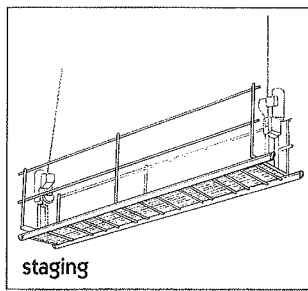
staggered Descriptive of fasteners, joints, or members arranged in two or more rows so that the beginning of each row is offset from the adjacent one.

staggered course A course, of shingles or tiles for instance, where the butts do not form a continuous horizontal line.

staggered riveting Rows of rivets installed in a staggered pattern.

staggered-stud partition A partition made of two rows of studs with alternating studs supporting opposite faces of the partition and each stud making contact with only one wall. Staggered-stud partitions often have an interwoven fiberglass blanket to improve the sound-insulation value of a partition.

staging (scaffolding) **1.** A temporary working platform against or within a building for construction, repairs, or demolition. **2.** A temporary working platform supported by the temporary timbers in a trench.



stain **1.** Color in a dissolving vehicle. When spread on wood or similar material, the stain penetrates and gives color to the material. **2.** A discoloration in the surface of a material, such as wood or plastic.

stained glass Glass given a desired color by use of an additive to the molten material, or by firing a stain into the surface of the formed glass. Stained glass is used for decorative windows or mosaics.

stainless steel Any of a number of steels alloyed with chromium and nickel. Depending on the alloy, the metal may possess good corrosion resistance, high heat tolerance, or high strength.

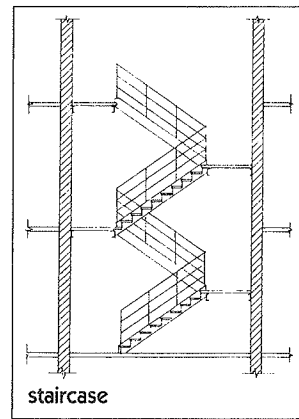
stair **1.** A single step. **2.** A series of steps or flights of steps connected by landings, used for passage from one level to another.

stair bracket A stiffener, often decorative, fixed under the nosing of a tread on an open-string stair.

stairbuilder's truss Crossed beams used to stiffen a landing of a stair.

stair carriage or stringer Support framing members for stair treads, usually a 2" x 12" notched plank. Also known as a "rough horse."

staircase **1.** A single flight or multiple flights of stairs including supports, frameworks, and handrails. **2.** The structure containing one or more flights of stairs.



stairhead The first stair at the top of a flight of stairs.

stair headroom The least clear vertical distance measured from a nosing of a tread to an overhead obstruction.

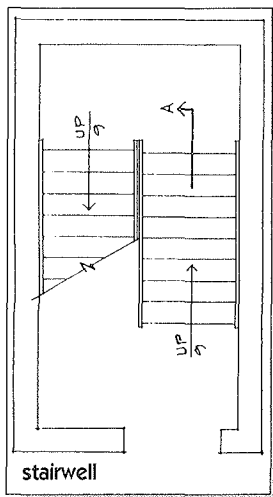
stair landing A level platform installed at the point where stairs change direction, at the top of a flight of stairs, or between flights.

stair rise The height of a stair (vertical distance between treads).

stair rod A metal rod used under a stair nosing to hold a carpet in place.

stair turret **1.** A structure containing only a winding stair. **2.** A housing projecting above a roof and containing a stair.

stairwell A vertical shaft enclosing a stair.



stake **1.** A short, pointed piece of wood or metal driven into the ground as a marker or an anchor. **2.** The process of marking a work or survey site with stakes. **3.** A small anvil, used in working sheet metal, supported by a sharp vertical leg inserted into a hole in a work surface.

staking out The process of driving stakes for batter boards to locate the limits of an excavation, or to identify the boundaries of a parcel of land.

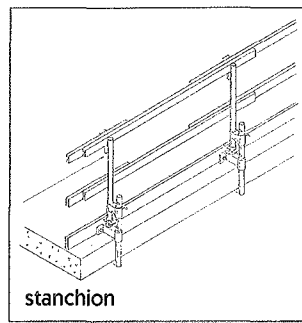
stalactite A downward-pointing deposit formed as an accretion of mineral matter produced by evaporation of dripping water from the surface of rock or of concrete; commonly shaped like an icicle. *See also stalagmite.*

stalagmite An upward-pointing deposit formed as an accretion of mineral matter produced by evaporation of

dripping water, projecting from the surface of rock or concrete, commonly conical in shape. *See also stalactite.*

stamp A seal required on drawings for commercial projects that contains the architect's or engineer's name and registration number. The individual's signature is usually required over the stamp.

stanchion **1.** A vertical post or prop supporting a roof, window, etc. **2.** An upright bar or post, as in a window, screen, or railing.



standard **1.** A grade of lumber suitable for general construction and characterized by generally good strength and serviceability. In light framing rules, the standard grade applies to lumber that is 2" to 4" thick and 2" to 4" wide. It falls between the construction and utility grades. **2.** A grade of Idaho white pine boards equivalent to #3 common in other species. **3.** In the British timber trade, a quantity of lumber that equals 1,980 board feet. **4.** General recognition and conformity to established practice.

standard absorption trench An absorption trench 12" to 36" (30 to 90 cm) wide, containing 12" (30 cm) of clean, coarse aggregate and a distribution pipe covered with a minimum of 12" (30 cm) of earth.

standard air Air with a density of 0.075 lb per cu ft (0.0012 gm per cc) that is close to air at 68°F (20°C) dry bulb and 50% relative humidity at a barometric pressure of 29.9" (76 cm) of mercury.

standard and better A mix of lumber grades suitable for general construction. The *and better* signifies that a portion of the lumber is actually of a higher grade than standard (but not necessarily of the highest grade). The proportion of higher grades included is a factor in determining market value.

standard atmosphere A pressure equal to 14.7 lb per sq in (1.01 x 10 dynes per sq cm).

standard brick Brick with the dimensions 2 1/4" x 3 3/4" x 8". Standard modular brick measures 2 2/3" x 4" x 8".

standard curing Exposure of test specimens of concrete to specified conditions of moisture, humidity, and temperature. *See also fog curing.*

standard deduction Fixed deduction from taxable income used when a taxpayer does not itemize deductions.

standard deviation A statistic, used as a measure of dispersion in a distribution, that is equal to the square root of the arithmetic average of the squares of the deviations from the mean.

standard hook A hook at the end of a reinforcing bar made in accordance with a standard.

standard knot Any knot in wood 1-1/2" (3.8 cm) or less in diameter.

standard matched Tongue-and-groove lumber with the tongue and groove offset, rather than centered as in center-matched lumber.

standard net assignable area The area of a project that can be rented to an occupant.

standard penetration resistance (Proctor penetration resistance) The load required to produce a standard penetration of a standard needle into a soil sample at a standard rate.

standard penetration test

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standard penetration test A test to estimate the degree of compactness of soil in place by counting the number of blows required to drive a standard sampling spoon 1' (0.3 meter) using a 140 pound (64 kilogram) weight falling 30" (0.8 meter).

standard pile See guide pile.

standard pressure See standard atmosphere.

standard sand Ottawa sand accurately graded to pass a U.S. Standard No. 20 (850-micrometer) sieve and be retained on a U.S. Standard No. 30 (600-micrometer) sieve, for use in the testing of cements. See also *Ottawa sand* and *graded standard sand*.

standard source A (light source A)
A tungsten filament lamp operating at a color temperature of 2856°K (2583°C).

standard source B (light source B)
A light source having a correlated color temperature of 4874°K (4601°C), approximating sunlight at noontime.

standard source C (light source C)
A light source having a correlated color temperature of 6774°K (6501°C), approximating a combination of direct sunlight and a clear sky.

standard temperature and pressure (STP) The standard conditions used to measure properties of matter. Standard temperature is 32°F, 0° or 273° Kelvin—the freezing point of water. Standard pressure is the pressure exerted by a column of mercury 760 millimeters high, referred to as 1% atmosphere.

standard tolerance A generally accepted tolerance for a specific product.

standard wire gauge The legal standard wire gauge in Great Britain and Canada.

standby lighting Lighting provided to supply illumination in the event of

failure of the lighting system so that normal activities can continue.

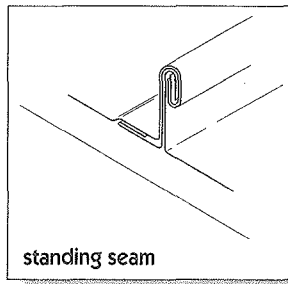
standing bevel A bevel that forms an obtuse angle.

standing finish Those items of interior finish that are permanent and fixed, as distinguished from such items as doors and movable windows.

standing leaf An inactive leaf of a double-door bolted in the closed position.

standing panel A panel with the longer dimension vertical.

standing seam A seam, in sheet metal and roofing, made by turning up two adjacent edges and folding the upstanding parts over on themselves.

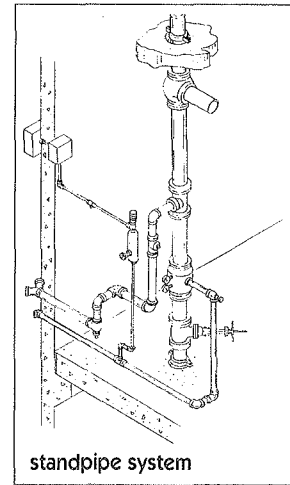


standing timber Trees that have not been cut, but are of merchantable size.

standing waste A vertical overflow pipe connected to piping at the bottom of a water tank to control the height of storage.

standpipe 1. A pipe or tank connected to a water system and used to absorb surges that can occur. **2.** A pipe or tank used to store water for emergency use, such as for fire fighting.

standpipe system A system of tanks, pumps, fire department connections, piping, hose connections, connections to an automatic sprinkler system, and an adequate supply of water used in fire protection.



St. Andrew's cross bond See English cross bond.

staple A double-pointed, U-shaped piece of metal used to attach wire mesh, insulation batts, building paper, etc.; usually driven with a staple gun.

staple gun (stapler) A spring-driven gun used to drive staples used for fastening materials such as building paper and batt insulation.

staple hammer A hand tool that holds a magazine of staples and drives a staple when the face strikes a surface.

stapler See staple gun.

stapling flange A flange on the edges of a faced insulation batt or blanket that is used to staple the insulation to studwork.

star drill See plugging chisel.

star expansion bolt A fastener used in concrete, consisting of two semicircular shields that are forced apart, to bear on the walls of a hole, as a bolt is driven into the shields.

starter 1. A device used with a ballast to start an electric-discharge lamp. **2.** An electric controller used to accelerate a motor from rest to running speed and to stop the motor.

starter board A 6" or 8" board used at the eave of a roof to provide a solid nailing surface for the first courses. A starter board is also used in reroofing to replace the old shingles at the eaves.

starter frame Shallow formwork projecting above floor level used to locate a column or wall.

starter piece The piece of pipe that starts the branch line. It extends from the cross main or riser nipple to the first head for a fire protection system.

starter strip (starting strip) A strip of composition roofing material applied along the eaves before the first row of shingles is laid.

starting board The first board nailed in place at the base of a form for concrete.

starting course The first course of shingles applied along the eaves.

starting newel The first support post for a handrail at the bottom of a stairway.

starting strip The first row of composition roofing laid along the eaves.

starved box A variable air volume box that has a less-than-desired flow despite a fully open damper.

starved joint A poorly bonded glue joint resulting from the use of too little glue.

statement of probable construction cost A cost estimate prepared by the design professional during each of the design phases for the owner's use.

statement of work A written statement describing the procurement of architectural and engineering services, including preliminary or schematic design, design development, and construction document preparation.

statements of ethical principles Guidelines for professional conduct distributed by professional societies.

static head The static pressure of a fluid expressed as the height of a column of the fluid that the pressure could support.

static load The weight of a single stationary body or the combined weights of all stationary bodies in a structure, such as the load of a stationary vehicle on a roadway. During construction, the static load of the combined weight of forms, stringers, joists, reinforcing bars, and the actual concrete to be placed. *See also dead load.*

static modulus of elasticity The value of Young's modulus of elasticity obtained by arbitrary criteria from measured stress-strain relationships derived from other than dynamic loading. *See also modulus of elasticity.*

static pressure **1.** The pressure exerted by a fluid on a surface at rest with respect to the fluid. **2.** The pressure a fan must supply to overcome resistance to airflow in an air distribution system.

statics That branch of mechanics dealing with forces acting on bodies at rest. Statics is the basis of structural engineering.

static test **1.** A test that subjects a curtain wall to a pressure differential equal to a specified wind pressure. **2.** A test that simulates the flow of water over a curtain wall during a hurricane. **3.** A test to determine the pressure exerted by a fluid while the system is at rest.

static transfer switch A device that transfers an electrical load from one AC power source to another without interruption.

static vent A vent that does not have a fan.

station **1.** A point on the earth's surface that can be determined by surveying. **2.** On a survey traverse, particularly a roadway, every 100' interval is called a station.

stationary hopper A container used to receive and temporarily store freshly mixed concrete.

station roof **1.** A roof shaped like an umbrella and supported by a single

column. **2.** A long roof supported on a row of columns and cantilevering off one or both sides of the column line.

station yards of haul The product of the number of cubic yards in a haul and the number of 100' (30.48-meter) stations through which it is hauled.

statute A law or enactment of the various federal, state, and local rule-making bodies such as Congress, state legislatures, and local planning and zoning boards.

statute of frauds A statute specifying that certain kinds of contracts, such as for the sale or lease of real property, are unenforceable unless signed and in writing, or unless there is a written memorandum of terms signed by the party to be charged. Statute varies by state.

statute of limitations Provision of law establishing a certain time limit from an occurrence during which a judgment may be sought from a court of law.

statute of repose A legislative enactment that bars a claim against a party unless the claim is brought within a specified period of time following an event described in the statute, regardless of whether or not the statute of limitations period for that claim has expired.

statutory Related to provisions specified in a law.

statutory bond A bond of which the content and form are established by statute.

statutory requirements Requirements that are embodied in the law.

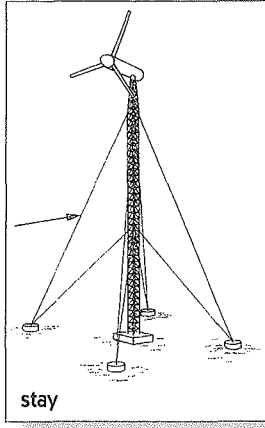
staunching piece A gap left between adjacent concrete bays until the concrete has cured and shrunk, when it is then filled with more concrete.

stave **1.** A narrow strip of curved wood used in the construction of barrels, buckets, or tanks. **2.** A ladder rung.

stay

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stay Anything that stiffens a frame or stabilizes some structural component.



stay bolt A long, metal rod with a threaded end and used as a stay.

stay rod Any rod-shaped tie used temporarily or permanently to prevent spreading of the parts it connects.

Steading's compound

Dicalcium aluminate monosilicate-8-hydrate, a compound that has been found in reacted lime-pozzolan and cement-pozzolan mixtures.

steam box An enclosure for steam-curing concrete products. *See also steam-curing room.*

steam chest A container in which wood is steamed for bending or forming.

steam cleaner A machine that provides pressurized steam to a nozzle for the purpose of cleaning grease or dirt from a surface. Detergents or chemicals are sometimes added.

steam curing Curing of concrete or mortar in water vapor at atmospheric or higher pressures and at temperatures between 100°F and 420°F (40°C and 215°C).

steam-curing cycle **1.** The time interval between the start of the temperature-rise period and the end of the soaking period or the cooling-off period. **2.** A schedule of the time and temperature of periods that make up the cycle.

steam-curing room A chamber for steam curing of concrete products at atmospheric pressure.

steamed wood Wood that has been softened in preparation for bending or for producing veneer.

steam grid humidifier An air duct humidifier that introduces steam into the air through perforated pipes.

steam hammer A pile hammer activated by steam pressure.

steam heating system A heating system in which heat is transferred from a boiler or other source, through pipes, to a heat exchanger. The steam can be above, at, or below atmospheric pressure.

steaming A process in which logs are heated with steam or hot water in special vats prior to peeling them into veneer. Steaming results in smoother veneer and improved recovery from the log. A similar process is used to prepare wood for bending or shaping.

steam injection In an environmental remediation operation, the process of injecting steam into soil to aid in the extraction of soil vapor or groundwater.

steam kiln *See steam-curing room.*

steam pipe Any pipe for the conveyance of steam.

steam shovel A power shovel operated by steam from an integral boiler. Steam shovels have largely been replaced by diesel-powered shovels.

steam stripping **1.** A process of removing volatile contaminants from soil or water by passing steam through the soil or water. **2.** A method of removing wallpaper.

steam table A table or section of counter equipped with removable food containers, the contents of which are kept warm by steam, hot water, or hot air circulating beneath the containers.

steam traps A device that discharges condensate air and prevents the passage of steam.

steam vat (steam chest) A container used in steaming to soften logs or flitches before peeling or slicing veneers.

steel Any of a number of alloys of iron and carbon, with small amounts of other metals added to achieve special properties. The alloys are generally hard, strong, durable, and malleable.

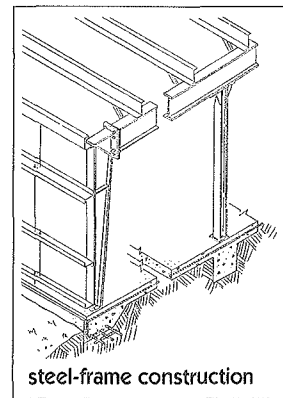
steel casement A casement generally made from hot-rolled steel sections and classified as a residence, intermediate, or heavy-intermediate steel casement.

steel domes 19" x 19" or 30" x 30" metal forms used in two-way joist construction of cast-in-place concrete slabs.

steel erector A contractor who undertakes to place, plumb, and secure a steel structure.

steel-frame construction

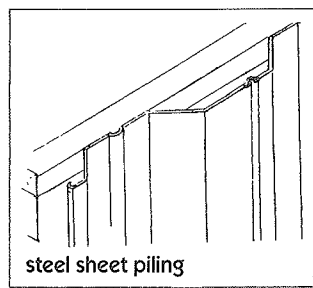
Construction in which steel columns, girders, and beams comprise the structural supporting elements.



steel inspection An inspection prior to concrete placement to ensure that steel rebar, window bucks, and other components are properly installed in compliance with the approved foundation plan.

steel sheet Cold-formed sheet or strip steel shaped as a structural member for the purpose of carrying the live and dead loads in lightweight concrete roof construction.

steel sheet piling Interlocking rolled-steel sections driven vertically into the ground to serve as sheeting in an excavation or to cut off the flow of groundwater.

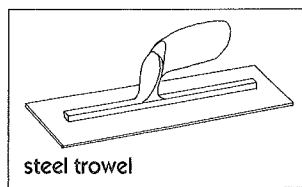


steel square A steel carpenter's square.

steel stair fill Concrete that is poured into metal pans to form stair treads and landings.

steel stud anchor A steel clip fastened to a door frame and used to secure the frame to a steel stud.

steel trowel A smooth concrete finish obtained with a steel trowel. *See also* trowel.



steel troweling A steel hand tool or machine used to create a dense, smooth finish on a concrete surface.

steel window An inexpensive type of mass-produced, standardized, and fire-resistant window first manufactured in the mid-19th century.

steel wool A matted mass of fine steel fibers, used principally for cleaning and polishing wood or metal surfaces.

steelworker (ironworker) A craftsman skilled in assembling structural steel or concrete reinforcing steel.

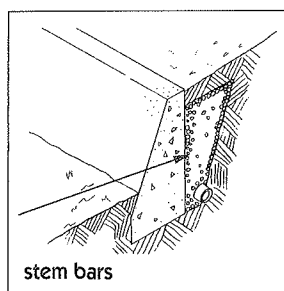
steening Brickwork laid without mortar.

steeplejack A craftsman who builds and/or repairs steeples, chimneys, and other tall masonry structures.

steering brake A brake to slow or stop one side of a tractor.

steering clutch A clutch that can disconnect power from one side of a tractor.

stem bars Bars used in the wall section of a cantilevered retaining wall or in the webs of a box. When a cantilevered retaining wall and its footing are considered as an integral unit, the wall is often referred to as the stem of the unit.



stemming A suitable inert, incombustible material, such as rock bits or other packing, or device used to confine or separate explosives in a drill hole, or to cover explosives in mudcapping.

stenciling A decorative painting technique using hand-cut or premanufactured cut-out shapes.

step brazing A method of brazing in which filler metals of successively lower brazing temperatures are used to prevent softening of previously brazed joints.

step down transformer An electric transformer with a lower voltage at the secondary winding terminals than at the primary winding terminals.

step joint 1. A notched joint used to connect two wood members meeting at an angle, such as a tie beam and a rafter. 2. A joint between two rails with different heights and/or cross sections.

stepladder A ladder with an integral supporting frame and narrow treads instead of rungs, usually built in the form of an inverted "V."

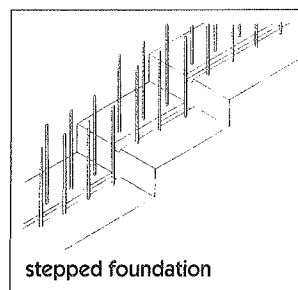
stepped flashing Flashing at the intersection of a sloped roof and a wall or chimney. The upper edge of each sheet is stepped with relation to adjacent sheets to maintain a safe distance from the sloped roof surface.

stepped floor A floor on a stage or platform that rises in steps, as opposed to a ramped floor.

stepped footing 1. A wall footing with horizontal steps to accommodate a sloping grade or bearing stratum.

2. A column or wall footing composed of two or more steps on top of one another to distribute the load.

stepped foundation A foundation constructed in a series of steps that approximate the slope of the bearing stratum. The purpose is to avoid horizontal force vectors that might cause sliding.



stepping Lumber designed to be used for stair treads. Stepping is vertical-grained and is customarily shipped kiln-dried, surfaced three sides, and bull-nosed on one edge. Besides the "C & Better" and "D" grades of solid wood, stepping is also made from particleboard for use where it will be covered.

stepping off Laying off the required length of a rafter by use of a carpenter's square.

step-plank Any hardwood lumber used to make steps, usually 1-1/4" to 2" (3.2 to 5.1 cm) thick.

step soldering

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step soldering A method of soldering in which solders with successively lower application temperatures are used to prevent the disturbing of previously soldered joints.

step-taper pile A pile formed of straight-sided, thin-walled segments of spirally corrugated steel that, once driven into the ground, are filled with concrete.

step-up transformer An electric device that used to convert a power supply to a higher voltage circuit.

stereobate The foundation, substructure, or platform upon which a building is constructed.

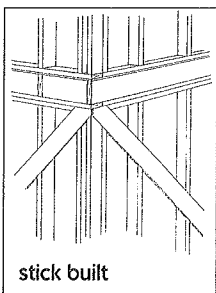
stereo photogrammetry The science of measuring from two photographs taken from known positions in relation to the building or structure. Using known dimensions of parts of the structure, other dimensions can then be determined by scaling.

stereotomy The practice of cutting stone to specified forms and then placing it.

sterling A grade of Idaho white pine boards, equivalent to #2 common in other species.

stick **1.** Any long, slender piece of wood. **2.** A waxed paper cartridge containing an explosive, usually 1-1/8" x 8" (3 x 20 cm). **3.** A rigid bar fastened to the bucket and hinged at the boom of a power shovel or a backhoe.

stick built A term describing frame houses assembled piece-by-piece from lumber delivered to the site with little or no previous assembly into components. The more typical type of residential construction is stick built.



sticker An additive that increases the strength with which water-soluble materials attach to solid surfaces.

sticky cement Finished cement that develops low or zero flowability during or after storage in silos, or after transportation in bulk containers, hopper-bottom cars, etc. Sticky cement may be caused by: (a) interlocking of particles, (b) mechanical compaction, (c) electrostatic attraction between particles, or (d) moisture. *See also* warehouse set.

stiffback *See* strongback.

stiffened compression element A compression element that has been stiffened on its weak axis in order to resist buckling on that axis.

stiffener **1.** A bar, angle, channel, or other shape attached to a metal plate or sheet to increase its resistance to buckling. **2.** Internal reinforcement, usually light-gauge channels, for a hollow metal door.

stiff frame *See* rigid frame.

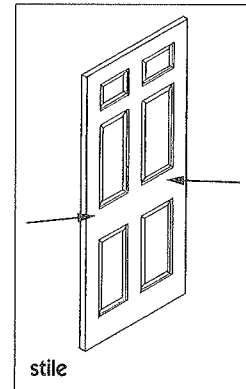
stiff leg derrick An erection derrick with a vertical mast shorter than its boom. The mast is tied from its peak to a triangular structural frame at its base by rigid steel members.

stiff-mud brick Brick produced by extruding a stiff but plastic clay (12% to 15% moisture) through a die and cutting the extruded material to length with wires.

stiffness Resistance to deformation.

stiffness factor A measure of the stiffness of a structural member. For a prismatic member, the stiffness factor is equal to the ratio of the product of the moment of inertia of the cross section and the modulus of elasticity for the material to the length of the member.

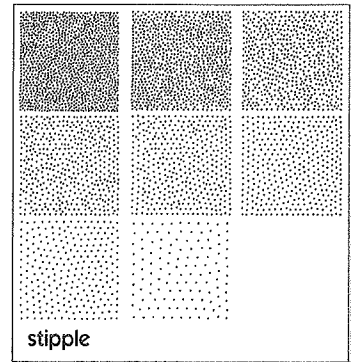
stile **1.** The vertical members forming the outside framework of a door or window. **2.** A set of steps crossing over a fence or wall. **3.** A roofing tile with an S-shaped cross section.



stilt **1.** A post used to raise a structure above ground or water level. **2.** A compression member placed above or below a similar member to gain additional height.

stinger A slang term for a welding rod.

stipple To make dots or short dashes on a surface as a decorative effect.



stippled finish A dotted or pebbly-textured finish on the surface coat of paint, plaster, or porcelain enamel, induced by punching the unset surface with a stiff brush.

stipulated sum agreement A contractual agreement in which a fixed amount is established for performance of the work.

stirrup **1.** A reinforcement used to resist shear and diagonal tension stresses in a concrete structural member. **2.** A steel bar bent into a "U" or box

shape and installed perpendicular to, or at an angle to the longitudinal reinforcement, and properly anchored.

3. Lateral reinforcement formed of individual units, open or closed, or of continuously wound reinforcement. The term *stirrups* is usually applied to lateral reinforcement in flexural members and the term *ties* to lateral reinforcement in vertical compression members. *See also tie.*

stitched veneer Veneer sheets composed of random width pieces of veneer sewn together with heavy thread. Several stitch lines run across the width of each piece of stitched veneer. In veneer production, the random width pieces are run through a large sewing machine and reclipped in desired (usually standard 48" to 54") sizes. Stitched veneer is usually used in the core plies of plywood.

stitch rivet One of a number of rivets installed at regular intervals and in a straight line to connect two parts and provide lateral stiffness.

stitch welding The union of two or more parts with a line of short equally-spaced welds.

St. John's spruce Canadian spruce.

stock **1.** Material or devices readily available from suppliers. **2.** The body or handle of a tool. **3.** A frame to hold a die when cutting external threads on a pipe. **4.** The total value of the equity in a corporation.

stock, 1244 In the event that a corporation's stock becomes worthless, it may offset up to \$50,000 of loss against ordinary income in each taxable year, provided the corporation meets the requirements of Section 1244 of the Internal Revenue Code.

stock brush A brush used to apply water to base coat or finish coat plaster to improve workability.

stock companies In defining insurance companies, those owned by a group of stockholders for the purpose of selling insurance.

stockhouse set *See sticky cement and warehouse set.*

stock lumber Lumber cut to standard sizes and readily available from suppliers.

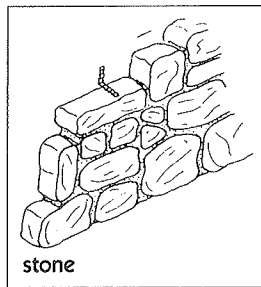
stock millwork Millwork manufactured in standard shapes and sizes and readily available from suppliers.

stockpile Material stored for later use, such as topsoil.

stock size A standard size of an item that is readily available from suppliers.

stoichiometric combustion A controlled combustion where fuel is reacted with the exact amount of oxygen required to oxidize all carbon, hydrogen, and sulfur in the fuel to carbon dioxide, water, and sulfur dioxide.

stone **1.** Individual blocks of rock processed by shaping, cutting, or sizing. For use in masonry work. **2.** Fragments of rock excavated, usually by blasting, from natural deposits and further processed by recrushing and sizing. For use as aggregate. **3.** A carborundum or other natural or artificial hone used to sharpen cutting edges of tools.



stone bolt A bolt cemented in a hole of a masonry unit for connection to another object.

stone chip A small, angular chip of stone that has been washed of dust.

stone dust Pulverized stone used in the construction of walkways or other stable surfaces. The dust is mixed with soil and compacted or used with gravel

to fill spaces between irregular stones. Stone dust is a by-product of stone crushing operations.

stonemason A craftsman skilled in constructing stonemasonry, including any preparation at the site.

stone sand Fine aggregate resulting from the mechanical crushing and processing of rock. *See also sand and fine aggregate.*

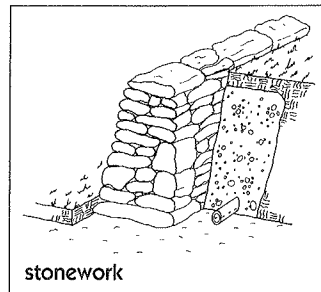
stone seal An asphaltic wearing surface made by rolling aggregate into a heavy application of bituminous material. Application is usually repeated several times.

stone-setter's adjustable multiple-point suspension scaffold A swinging-type scaffold having a platform suspended at the four corners by hoisting devices to permit lowering or raising the platform to any desired working level.

stone slate Slate-like slabbing or flashing obtained from limestone or sandstone that has been separated along its bedding. Used as rough shingling on a roof.

stone veneer, thin Stone cut 2" thick or less and applied to an interior or exterior building surface in a non-load-bearing manner. Granite, marble, limestone, slate and travertine are most commonly used.

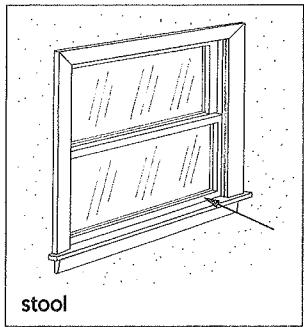
stonework **1.** Masonry construction using stone. **2.** The preparation or setting of stone for building or paving.



stool

S

stool 1. A narrow interior shelf, across the lower part of a window opening, that butts against the sill. 2. A framed support. 3. A toilet.



stool

stool cap The molding that sits on the windowsill and extends into a room to form a kind of shelf.

stoop A small platform at the entrance to a house, often consisting of several wide steps.

stop 1. On doors, the molding on the inside of the doorjamb that causes the door to stop in its closed position, preventing it from swinging through. On windows, the molding that covers the inside face of the jamb. 2. A type of molding nailed to the face of a door frame to prevent the door from swinging through. A stop is also used to hold the bottom sash of a double-hung window in place. 3. A valve used to shut off water supply to a fixture.

stop-and-check valve See **nonreturn valve**.

stop-and-waste cock A stopcock with a drain plug in the valve. When the valve is closed, water in the downstream piping can be drained through the plug. A stop-and-waste cock is often used at connections to outdoor faucets so the exterior piping can be drained for the winter.

stop box A cast-iron pipe installed vertically underground and covered with a lid. It provides access (with a tool on a pole) to a water cut-off valve for the home.

stopcock A valve to shut off the flow of fluid in a branch of a distribution system in a building.

stope An excavating operation carried out in a series of steps.

stop glazing Either the lip at the back of a rabbet or the molding applied at the front. These serve to hold a light in a sash or frame with the help of spacers.

stopped dado A dado that ends before the front edge of the receiving board.

stopped miter A miter joint used with members of different thickness.

stop valve Any valve in a piping distribution system that is used to stop flow.

stopwork A mechanism on a lock to hold the bolt in the latched position so the lock cannot be opened from the outside. A stopwork can usually be set by a sliding or push button.

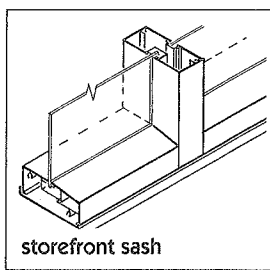
stop work order (stop order) An order issued by the owner's representative to stop work on a project. Reasons for the order include failure to conform to specifications, unsatisfied liens, labor disputes, and inclement weather.

storage hopper See **stationary hopper**.

storage life (shelf life) The length of time that a product, such as a package adhesive or sealant, can be stored at a specified temperature range and remain usable.

storage tank Any tank that receives a fluid and holds it for later distribution.

storefront sash An assembly of light metal members that form a frame for a fixed-glass storefront.



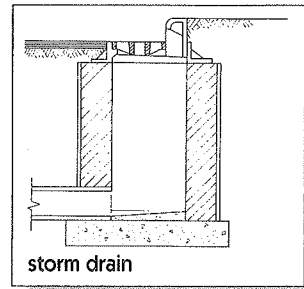
storefront sash

storey rod See **story rod**.

storm clip A clip on the exterior of a glazing bar that holds the pane in place.

storm door (weather door) A door, usually fully glazed, fitted to the outside of the frame of an exterior door to provide additional protection against cold and wind.

storm drain A drain used to convey rain water, subsurface water, condensate, or similar discharge, but not sewage or industrial waste.



storm drain

storm porch A porch, or portion thereof, intended to protect an entrance to a house from the weather.

storm sash See **storm window**.

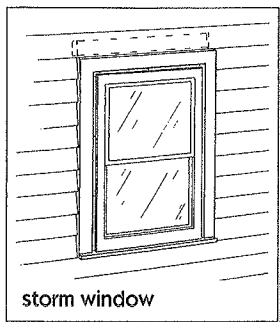
storm sewage That material flowing in combined sewers or storm sewers as a result of rainfall.

storm sewer A sewer used for conveying rainwater and/or similar discharges, but not sewage or industrial waste, to a point of disposal.

storm sheet A sheet of roofing curved down over an eave to protect the eave from rain.

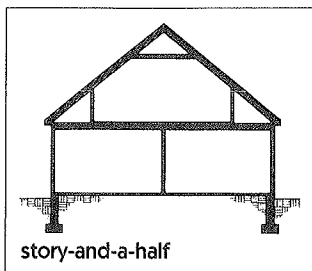
storm water That portion of rainfall or other precipitation that runs over the ground surface for the short period after a storm as the flow exceeds the normal runoff.

storm window (storm sash) An exterior window placed over an existing window to provide additional protection against the weather.



story 1. That part of a building between the upper surface of a floor and the upper surface of the floor above. Building codes differ in designations applied when a part of a story is below grade. **2.** A major division in the height of a building even when created by architectural features, such as windows, rather than horizontal divisions. For example, an area may be two stories high.

story-and-a-half The designation of a building in which the second story rooms have low headroom at the eaves.



story pole A pole used to gauge height (in stories) during masonry construction.

story post An upright post that helps support a beam on which a floor rests.

story rod A wooden rod of a length equal to one story height, sometimes divided in parts each equal to one riser in a stair, for use in stair construction.

stove bolt A common bolt with a round or flat head and a slot for a screwdriver.

straddle pole One of two poles laid along a roof line from an upright at the eaves and connected to the other pole at the ridge. Used in a saddle scaffold.

straddle scaffold See saddle scaffold.

straight claw hammer A hammer with a claw well-suited for nail pulling and a striking face with a better-centered mass than a traditional curved claw hammer.

straightedge (rod) A rigid, straight piece of wood or metal used to strike off or screed a concrete surface to proper grade, or to check the flatness of a finished grade. See also rod, screed, and strike off.

straight grain A piece of wood in which the principal grains run parallel to its length.

straight jacket A stiff timber attached to a wall to reinforce and increase the wall's rigidity.

straight joint 1. A continuous joint in a wood floor formed by the butt ends of parallel boards. **2.** An edge joint between two parallel timbers. **3.** Vertical joints in masonry that form a continuous straight line.

straight-joint tile A term describing single-lap tiles designed to be laid so that the edges of each course run in a straight line from eave to ridge.

straight-line edger (straight-line rip saw) A mechanically fed saw used to dress and straighten edges of lumber or veneer.

straight-line theory An assumption in reinforced-concrete analysis according to which the strains and stresses in a member under flexure vary in proportion to the distance from the neutral axis.

straight lock A lock mounted on the inside face of a door. The only preparation is cutting a keyhole.

straight tee A pipe fitting that has a side port at right angles to the run, with all openings the same size.

strain Deformation of a material resulting from external loading. The measurement for strain is the change in length per unit of length.

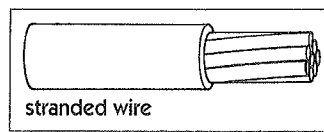
strain gauge A sensitive electrical or mechanical instrument used to measure strain in loaded members or objects, usually for research or development.

straining beam (straining piece, strutting piece) 1. A horizontal strut in a truss, placed above the tie beam or the bottom of the rafters, usually mid-height. **2.** The chord between the upper ends of the posts in a queen post truss.

strake A single row of clapboard siding.

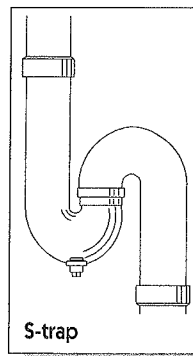
strand A prestressing tendon composed of a number of wires twisted about a center wire or core.

stranded wire A group of fine wires used as a single electric conductor.



strand grip A device used to anchor a prestressing tendon.

S-trap An S-shaped trap that provides a water seal in a waste or soil pipe. Used most commonly at sinks and lavatories.



strap

S

strap 1. A metal plate fastened across the intersection of two or more timbers.

2. See pipe strap.

strap bolt A bolt in which the middle portion of its shank is flattened, so the unit can be bent in a U-shape. See also lug bolt.

straphanger A hanger made from a thin, narrow strip of material.

strap joint A butt joint between two pieces secured by a strap, or straps, and fasteners.

strapping (tuffing) Flexible metal bands used to bind units for ease of handling and storage.

strap wrench A hand tool with a flexible, adjustable strap that is used to tighten or remove irregularly shaped connectors, pipes, or fittings.

stratification 1. The separation of overwet or overvibrated concrete into horizontal layers with increasingly lighter material toward the top. Water, laitance, mortar, and coarse aggregate will tend to occupy successively lower positions in that order. **2.** A layered structure in concrete resulting from placing of successive batches that differ in appearance. **3.** The occurrence in aggregate stockpiles of layers of differing grading or composition. **4.** A layered structure in a rock formation. **5.** The flow at the junction of two airstreams in layers that prevent the proper mixing of the two airstreams.

stratified rock Rock that has been formed by compaction, cementation, or crystallization of successive beds of deposited material.

stratum A bed or layer of rock or soil.

straw bale A low-embodied-energy farming by-product that can be used to build highly insulated (R-50), fire- and termite-resistant walls. Paired with stucco exterior and drywall interior, straw bale is a plentiful green construction alternative to lumber.

streamline flow Fluid flow in which the velocity at every point is equal in magnitude and direction.

streamlined specification A shortened, often preliminary version of a specification that includes vital technical information.

stream shingle Flat pieces of thin rock having a sloped, overlapping pattern resembling shingling; usually found in small, fast streams.

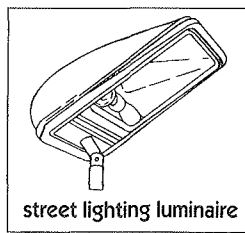
street elbow (service ell, street ell)

A pipe elbow with male threads on one end and female threads on the other.

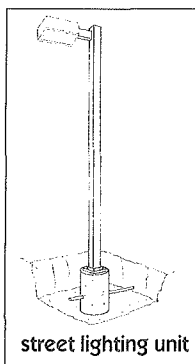
street ell See street elbow.

street floor That floor of a building nearest to street level. According to some building codes, the street floor is a floor level not more than 21" above or 12" below grade level at the main entrance.

street lighting luminaire A complete lighting unit intended to be set on a pole or post with a bracket.



street lighting unit An assembly consisting of a pole or post, bracket, and luminaire.



street line 1. A line dividing a lot or other area from a street. **2.** A side boundary of a street, as legally defined.

strength See compressive strength, fatigue strength, flexural strength, shear strength, splitting tensile strength, tensile strength, ultimate strength, and yield strength.

strength design method (ultimate strength method) A design method in which service loads are increased sufficiently by factors, often referred to as *load factors*, to obtain the ultimate design load. The structure or structural element is then proportioned to provide the desired ultimate strength.

stress Intensity of internal force (i.e., force per unit area) exerted by either of two adjacent parts of a body on the other across an imagined plane of separation. When the forces are parallel to the plane, the stress is called *shear stress*; when the forces are normal to the plane, the stress is called *normal stress*; when the normal stress is directed toward the part on which it acts it is called *compressive stress*; when it is directed away from the part on which it acts it is called *tensile stress*.

stress corrosion Corrosion of a metal accelerated by stress.

stress corrosion cracking Cracking of metal that occurs under the combined influence of certain corrosive environments and applied or residual stresses.

stress crack An external or internal crack in a plastic as a result of applied tensile stresses.

stress diagram See stress-strain diagram.

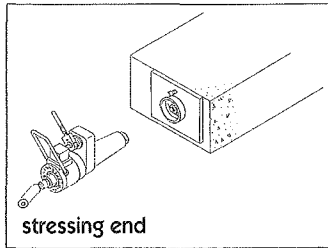
stressed-skin construction

Construction in which a thin material on the surface of a building is used to carry loads.

stressed-skin panel A panel assembled by fastening plywood or similar sheets over a frame or core, on both sides. The result is a composite structural member.

stress-graded lumber Lumber graded for strength according to the rate of growth, slope of grain, and the number of knots, shakes, and other defects.

stressing end In prestressed concrete, the end of the tendon from which the load is applied when tendons are stressed from one end only.



stress relaxation Stress loss developed from strain when a constant length is maintained under stress.

stress-relief heat treatment A process used to relieve residual stresses that involves the uniform heating of a material or structure to a high temperature.

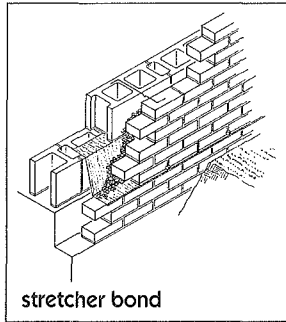
stress-strain diagram A diagram for a particular material with values of stress plotted against corresponding values of strain, usually with stress plotted as the ordinate.

stress wave timing A technique used on-site to locate and measure areas of decay in wood support members. A compression stress is induced in a member, and the speed in which it spreads is measured.

stretcher A masonry unit laid with its length parallel with the face of the wall. *See also header.*

stretcher block A concrete masonry unit used as a stretcher.

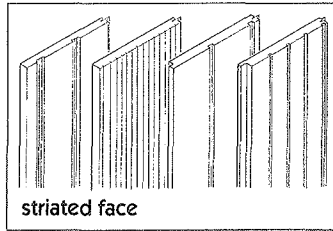
stretcher bond (running bond, stretching bond) A masonry bond with all courses laid as stretchers and with the vertical joint of one course falling midway between the joints of the courses above and below.



stretcher leveling A method of straightening sheet metal.

striated Having parallel grooves in the face, as in a fluted column.

striated face The face of a plywood panel that has been given closely spaced, shallow grooves to provide a vertical pattern.



strike **1.** In masonry, to cut off the excess mortar at the face of a joint with a trowel stroke. **2.** To remove formwork. **3.** A work stoppage by a body of workers. **4.** A metal plate installed on a door frame where a latch or dead bolt engages.

strike breaker One who takes the place of a workman who has gone on strike. *See also scab.*

strike edge *See leading edge.*

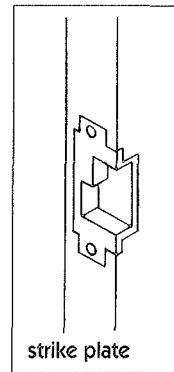
strike jamb The jamb on which the strike plate is mounted.

strike off (strikeoff) **1.** To remove concrete in excess of that which is required to fill the form evenly or bring the surface to grade, performed with a straightedged piece of wood or metal by means of a forward sawing movement

or by a power-operated tool appropriate for this purpose. **2.** The name applied to the tool. *See also screed and screeding.*

strike plate (strike, striking plate)

A plate or box, mounted in a jamb, with a hole or recess shaped to receive and hold a bolt or latch from a lock on the door.



striker A slightly beveled metal plate attached to a strike plate to guide a door latch to its socket.

strike reinforcement A metal piece welded inside a hollow metal frame to which the strike plate is attached and which also serves to strengthen the frame.

strike stile *See strike plate.*

striking The removal of temporary supports from a structure.

striking plate *See strike plate.*

striking stile *See lock stile.*

stringcourse (belt course) A horizontal band of masonry, usually narrower than the other courses, which may be flush or projecting, and plain or ornamented.

stringer or string **1.** A secondary flexural member parallel to the longitudinal axis of a bridge or other structure. *See also beam.* **2.** A horizontal timber used to support joists or other cross members in floors or ceilings. **3.** In stairs, the framing member that supports the treads.

stringer bead

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stringer bead A continuous bead of weld metal made by moving the electrode in a direction parallel to the bead without much transverse oscillation.

stringing mortar Spreading a long enough mortar bed to lay several masonry units at one time.

strip **1.** Board lumber 1" in nominal thickness and less than 4" in width, frequently the product of ripping a wider piece of lumber. The most common sizes are 1" x 2" and 1" x 3". *See also furring.* **2.** To remove formwork or molds. **3.** To remove an old finish with paint removers. **4.** To damage the threads on a nut or bolt.

strip core (blackboard) A composite board whose core is made of strips of wood, laid loose or glued together. Veneer is glued to both sides of the core with its grain at right angles to the grain of the core pieces.

strip flooring Flooring made of wood strips that are pieced together in a tongue-and-groove assembly.

strip footing *See continuous footing.*

strip foundation A continuous foundation of which the length considerably exceeds the breadth.

striplight A lighting assembly used to flood all or part of a stage, consisting of a row of lamps mounted in a trough with a reflecting hood and color frames.

strip mopping A method of applying hot bitumen to a roof deck in parallel strips.

stripper **1.** A liquid compound formulated to remove coatings by chemical and/or solvent action. **2.** A drywall tool with a serrated wheel for cutting wallboard.

stripping *See strip.*

stripping agent *See release agent.*

stripping felt A narrow strip of roofing felt used to cover a flange of metal flashing.

stripping piece A splayed narrow member used to facilitate removal of formwork in a confined space.

stripping shovel A mobile power shovel with a long boom for ditching and removal of bulk material.

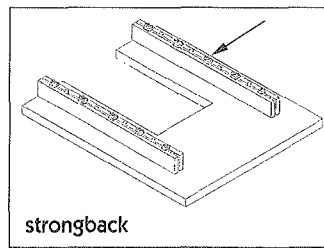
strip pouring A quick and economical way to place concrete slabs, allowing for a continuous pour with control points cut after the concrete has set.

strip slates *See asphalt shingles.*

strip taping *See taping strip.*

stroke **1.** A run of clapboard on the side of a house. **2.** A row of steel plates in a steel chimney.

strongback A frame attached to the back of a form to stiffen or reinforce it during concrete placing or handling operations.



stop A smooth-surfaced hand tool, often made of leather, that is used for final polishing or smoothing of the honed edge of a wood-cutting tool.

struck joint A masonry joint in which excess mortar is removed by a stroke of a trowel.

struck tools Tools that perform work by placing the sharp end (called the *working end*) of the tool on a surface and striking the other end (the *struck end*) with a hammer. The working end of a struck tool must be kept sharp. The face on the struck end must be kept smooth and even to prevent off-center blows. Examples of struck tools include chisels, punches, and wedges.

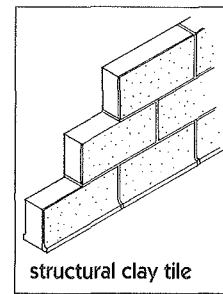
structural A term applied to those members in a structure that carry an imposed load in addition to their own weight.

structural analysis The determination of stresses in members in a structure due to imposed loads from gravity, wind, earthquake, thermal effects, etc.

structural-borne sound Sound that has traveled through a structure as vibration in solid material.

structural clay facing tile A structural clay tile with a finished ceramic face.

structural clay tile A hollow masonry unit molded from clay, shale, fireclay, or a mixture of such materials.



structural drawings

Graphic representations of the members, assemblies, and systems that will transmit live and dead loads of the structure to the earth.

structural engineering That branch of engineering concerned with the design of the load-supporting members of a proposed structure, and also with the investigation of existing structures which are suspect.

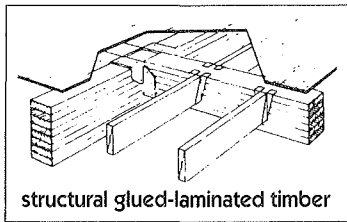
structural failure **1.** The inability of a structure or structural member to perform its intended function, perhaps caused by collapse or excessive deformation. **2.** A marked increase in strain without an increase in load.

structural frame All the members of a building or other structure used to transfer imposed loads to the ground.

structural glass Rectangular tiles or panels of glass used as finish for walls.

structural glued-laminated timber

A wooden structural member made from selected boards strongly glued together.



structural health monitoring A system that monitors the condition of a building structure.

structural insulation board

A rigid panel, often constructed of polyurethane foam insulation between a facing material such as foil or oriented strand board, that exhibits both strength and thermal insulating properties. Many such products are suitable for use as wall or roof sheathing.

structural joists and planks

Lumber 2", 3", or 4" thick and 6" or wider, graded for its strength properties. Such planks are used primarily for joists in residential construction and graded, in descending order, select structural, #1, #2, and #3. The #1 and #2 grades are usually marketed in combination as #2 & Better.

structural light framing A category of dimension lumber up to 4" in width which provides higher bending strength ratios for use in engineered applications, such as roof trusses. The lumber is often referred to by its fiber strength class, such as 175f for #1 & Better Douglas Fir, or as stress-rated stock.

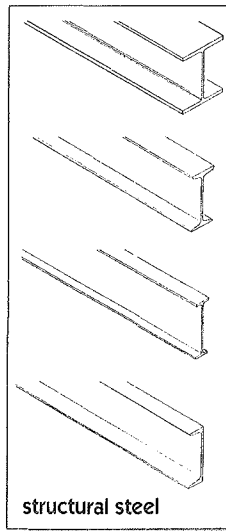
structural lumber Any lumber with nominal dimensions of 2" or more in thickness and 4" or more in width

and which is intended for use where working stresses are required. The working stress is based on the strength of the piece and the use for which it is intended, such as beams, stringers, joists, planks, posts, and girders.

structural plate With reference to drainage structures, heavily corrugated steel plate, usually curved, that are bolted together to form large pipes, arches, and other drainage structures.

structural shape A hot-rolled or cold-formed member of standardized cross section and strength, generally used in a structural frame. Common structural shapes are angle irons, channels, tees, H-sections, and wide flange beams.

structural steel Steel rolled in a variety of shapes and manufactured for use as load-bearing structural members.



structural steel fastener Any fastener used to connect structural steel members to each other, or to supporting elements, or with concrete to make a composite section.

structural tee 1. A structural shape made by cutting a wide-flange beam or I-beam in half. 2. A hot-rolled steel member shaped like the letter "T."

structural timber Structural lumber with a nominal dimension of 5" or more on each side, used mainly as posts or columns.

structural timber connector See timber connector.

structural veneer Veneers used in the construction of structural plywood panels, as opposed to decorative veneers.

structure A combination of units fabricated and interconnected in accordance with a design and intended to support vertical and horizontal loads.

structure-borne sound Sound energy imparted directly to and transmitted by the elements of a structure. Plumbing noises traveling through pipes are a good example.

structured cabling system (SCS)

A cabling system that supports several applications, such as video, voice, data, and building automation systems functions, reducing the overall cost and space required for cabling.

structure height The vertical distance from grade to the top of the structure.

strut See shore.

stub A short projecting element.

stub mortise A mortise that does not project entirely through the piece in which it is cut. See also blind mortise.

stub mortise and tenon See blind mortise and tenon joint.

stub pile A short pile.

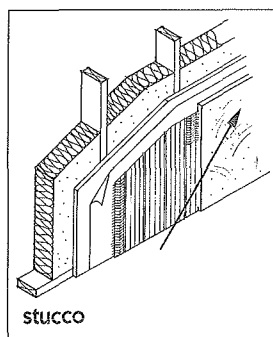
stub tenon A short tenon cut to fit a stub mortise.

stub wall A low wall, usually 4" to 8" (100 mm to 200 mm) high, placed monolithically with a concrete floor or other members to provide for control and attachment of wall forms.

stucco

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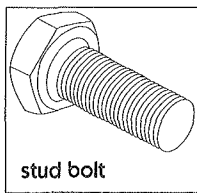
stucco A cement plaster used to cover exterior wall surfaces; usually applied over a wood or metal lath base.



stud 1. A vertical member of appropriate size (2" x 4" to 4" x 10") (or 50 mm x 100 mm to 100 mm x 250 mm) and spacing (16" to 30") (or 400 mm to 750 mm) to support sheathing or concrete forms. **2.** A framing member, usually cut to a precise length at the mill, designed to be used in framing building walls with little or no trimming before it is set in place. Studs are most often 2" x 4", but 2" x 3", 2" x 6" and other sizes are also included in the stud category. Studs may be of wood, steel, or composite material. **3.** A bolt having one end firmly anchored. See also *shear stud*.

stud anchor A floor anchor for studs in a wall.

stud bolt A bolt firmly anchored in, and projecting from, a structure, such as a concrete pad; used to secure another member, as in bolting a sill plate to concrete.



stud crimper A hand tool used to speed metal stud construction. The crimper joins vertical studs to horizontal runners with a piercing action.

studding 1. The material from which studs are cut. **2.** See *stud (2.)*.

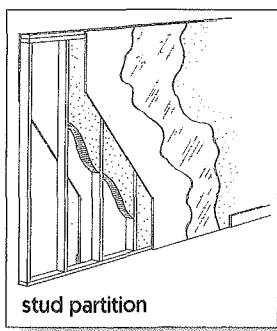
stud driver A device for driving a hardened steel fastener into concrete or other hard material, consisting of a hand-held driver that positions the fastener. A blow on the head of the driver forces the fastener into the material.

stud grade A grade of framing lumber under the National Grading Rule established by the American Lumber Standards Committee. Lumber of this grade has strength and stiffness values that make it suitable for use as a vertical member of a wall, including use in load-bearing walls.

stud gun A powered stud driver.

stud opening A rough opening in wood framing.

stud partition A partition in which studs are used as the structural base. Wallboard is usually applied over the studs.



stud shoe A metal bracket used as reinforcing for a vertical stud.

stud shooting Installing fasteners with a stud gun.

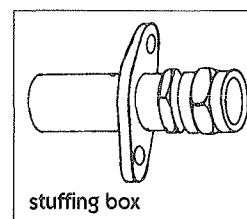
stud welding Attaching a special metal shear stud into a steel member by resistance welding. A special gun is used to hold the stud and provide electric current for the welding process. Shear studs are used for composite construction in which steel and concrete form a composite beam.

studwork Brick masonry interspaced with studs.

study 1. A preliminary sketch. **2.** The programming phase of facility planning that precedes building design.

stuff Sawn timber.

stuffing box A packing gland surrounding a shaft to prevent leakage, usually filled with soft packing to prevent fluids or gases from leaking.



stump veneer Veneer that has been produced from the roots of a tree, used in hardwood plywood manufacturing because of its grain configurations.

Sturd-i-floor® A trade name registered by the American Plywood Association for a panel designed specifically for use as combined subfloor/underlayment in residential floor applications. It is available in several thicknesses, each keyed to a recommended spacing of floor joists from 16" to 48".

Sturd-i-wall® APA 303 siding panels intended to be attached directly to studs, as combined sheathing/siding, or over nonstructural wall sheathing. The name is a registered grade-trademark of the American Plywood Association.

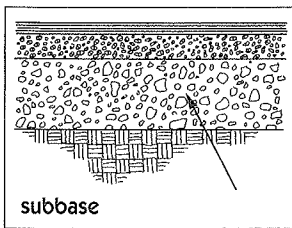
styrene butadiene rubber (SBR) or SB latex A synthetic rubber material widely used for applications including wiring insulation and for conventional carpet backing. SBR contains potentially toxic chemicals.

Styrofoam® The brand name of a lightweight extruded polystyrene product noted for its excellent thermal insulation performance.

sub Contraction of subcontractor.

subalpine fir *Abies lasiocarpa*. One of the true firs, this species is grouped for commercial purposes under the White Woods designation.

subbase **1.** A layer in a pavement system between the subgrade and base course or between the subgrade and the concrete pavement. **2.** The bottom front strip or molding of a baseboard.



subbasement **1.** A level, or levels, of a building below the basement. **2.** A story immediately below a basement.

sub-bid A bid offered by a subcontractor.

sub-bidder (subbidder) A person or entity who has a direct contract with the contractor for a portion of the work at the site.

subcasing See **blind casing**.

subcontract An agreement between a prime contractor and a contractor (specializing in a particular trade) for the completion of a portion of the work for which the prime contractor is responsible.

subcontractor One under contract to a prime contractor by subcontract for completion of a portion of the work for which the prime contractor is responsible. See also **supplier and vendor**.

subcooling Cooling a refrigerant below its saturated condensing temperature.

subdivided truss A truss with additional framing members in the panels to shorten the effective length of the panels.

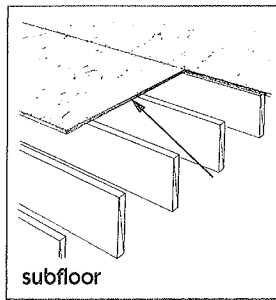
subdivision regulations Local municipal ordinances specifying the conditions under which a tract of land can be

subdivided. The ordinances may include layout and construction, street lighting and signs, sidewalks, sewage and storm water systems, water supply systems, and dedication of land for schools, parks, etc.

subdrain A pipe with perforations or open joints that has been buried in a trench backfilled with pervious soil for the purpose of intercepting groundwater or seepage.

subfeeder An electric feeder that originates at a distribution center other than the main distribution centers and supplies one or more branch-circuit distribution centers.

subfloor (blind floor, counterfloor) A rough floor laid on floor joists and serving as a base for the finish floor. A subfloor may also be used as a structural diaphragm to resist lateral loads.



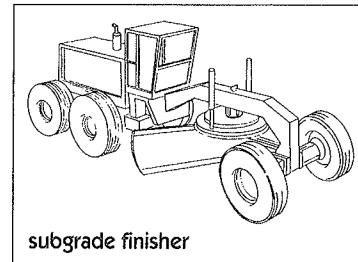
subflooring Plywood sheets or construction grade lumber used to construct a subfloor.

subflorescence Salt crystallization inside masonry units, which can cause damage to the units' internal structure. It may occur when the mortar surrounding the masonry units has a lower rate of permeability than the units themselves.

subframe (rough buck, subbuck) **1.** A structural frame of wood members or channel-shaped metal members that support the finish frame of a door or window. **2.** A framework supporting wall siding or panels.

subgrade **1.** The soil prepared and compacted to support a structure or a pavement system. **2.** The elevation of the bottom of a trench in which a sewer or pipeline is laid.

subgrade finisher A highway fine grading machine with tracks or wheels both behind and in front of a helical rotating cutting device that spreads the excess material to either side of the cut.



subgrade reaction See **contact pressure**.

subgrade soil The soil that lies below ground level and extends to such depth as may affect the support of the pavement.

subheading A subdivision of a heading used in an organizational system.

subject to mortgage A legal subjection of a property to an existing mortgage if the purchaser has actual or constructive notice of the mortgage. For example, if a mortgage of real property has been recorded, the new owner is not liable for mortgage payments unless he has agreed to that liability. However, the mortgagee may foreclose if there is a default in payments.

sublease A lease by a tenant of part or all of leased premises, for part or all of the term of the original lease.

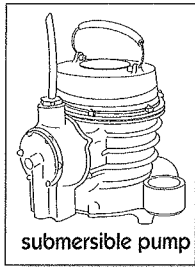
sublet To issue a contract to a subcontractor.

submerged arc welding A type of arc welding in which the arc and weld are shielded by a blanket of powdered metal called flux.

submersible pump

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submersible pump A water pump with an electric motor in the same housing with the pump, designed to operate while submerged in water. Eliminates suction lift limitations, loss of prime, need for suction hose, and the noise and fumes of an internal combustion engine.



sub-metering Measuring utilities used by individual tenants in a building.

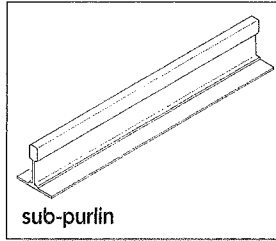
submittal A sample, manufacturer's data, shop drawing, or other such item submitted to the owner or the design professional by the contractor for the purpose of approval or other action, usually a requirement of the contract documents.

submit the bid Deliver a bid to a sponsor. *See also tender.*

subordinate lien Any mortgage lien subsequent to the first. In event of foreclosure, holders of such liens may resort to the property for payment only if there is any surplus after prior liens have been paid, with priority usually determined by the chronological sequence in which the mortgages were initiated.

subparagraph The first subdivision of a paragraph in construction specifications and contracts. May be subdivided into several clauses.

sub-purlin (subpurlin) A light structural section used as a secondary structural member, and used in lightweight concrete roof construction to support the formboards over which the lightweight concrete is placed.



subrail A component of a stair rail system that runs down the stairs from the top of the string and upon which the balusters are mounted.

subrogation The assumption by a third party of the legal rights of another to collect debts and damage. An insurance carrier may, for example, step into the shoes of the insured and file a claim or lawsuit against any party when the insured could have sued.

subsealing The placing of a waterproofing material under an existing pavement to waterproof the pavement and to fill voids in the subsoil.

subsidence Settlement over a large area as opposed to settlement of a single structure.

subsill **1.** An additional sill fitted to the outside of a window as a stop for screens and to increase the shedding distance. **2.** A rough doorsill fixed to the groundsill.

subsoil The bed or stratum of soil lying immediately below the surface soil and which is usually devoid of humus or organic matter.

subsoil drain A drain installed to collect subsurface or seepage water and convey it to a point of disposal.

substantial completion The condition of the work when the project is substantially complete, and ready for owner acceptance and occupancy. Any items remaining to be completed should, at this point, be duly noted or stipulated in writing.

substantial performance A party's performance of most of its contractual obligations, which entitles it to

payment of at least a portion of the contract price and precludes a termination for default.

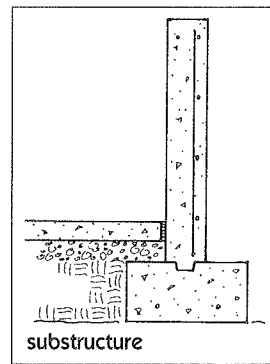
substation An assembly of equipment, including switches, circuit breakers, buses, and transformers, for switching power from one voltage or system to another.

substitution A product, material, or piece of equipment offered in place of that specified.

substrate An underlying material that supports or is bonded to another material on its surface.

substrate failure A surface failure in a concrete wall at a joint, caused by a sealant of high tensile strength that tears weak concrete or mortar from the face of the joint.

substructure The foundation of a building that supports the superstructure.



sub-subcontractor One under contract to a subcontractor for completion of a portion of the work for which the subcontractor is responsible.

subsurface contamination The presence of hazardous materials in the soil or groundwater under a site.

subsurface investigation (geotechnical investigation) The sampling and laboratory testing process (including soil borings) to establish subsurface profiles, relative strengths, compressibility, and other

characteristics of strata deep enough to affect project design.

subsurface rights The exclusive right of real property owners to use the ground beneath the surface of their land.

subsurface sand filter A sewage filtering system consisting of a number of lines of perforated pipe or drain tile surrounded by coarse aggregate, an intermediate layer of sand as filtering material, and a system of underdrains to carry off the filtered liquid.

subsurface sewage disposal system

A system for treating and disposing of domestic sewage, usually from a single residence, by means of a septic tank and a soil absorption system.

successful bid A bid that is accepted by a sponsor for award of contract; a low bid (assuming that there will be an award of contract).

successful bidder The contractor chosen by the project owner to receive award of the contract for construction. *See also selected bidder.*

sucker A shoot rising from an underground root or stem.

suction **1.** The absorption of water from a plaster finish coat by the base coat, gypsum block, or gypsum lath, functioning to increase bond and promote better adhesion to the base. **2.** The adhesion of mortar to brick. **3.** A vacuum effect created when wind load on a building creates a load in an outward direction.

suction dredge A barge with a closed pipe attached to a boom, a centrifugal pump for suction, and a pipeline to the point of deposit. The excavated solids suspended in water are transported and deposited.

suction pump A pump that draws water from a reservoir at a level lower than the pump, or from a pipe operating at a lower hydraulic gradient than the pump.

sugar pine *Pinus lambertiana*. A pine species from northern California and

southern Oregon. Light, smooth, and easily worked; widely used in millwork, patternwork, and various interior applications. Its name is derived from the sugary, sweet tasting deposits of resin exuded from its bark after injury to the tree.

sulfate attack A chemical and/or physical reaction between sulfates usually in soil or ground water and concrete or mortar, primarily with calcium aluminate hydrates in the cement-paste matrix, often causing deterioration.

sulfate resistance The ability of concrete or mortar to withstand sulfate attack. *See also sulfate attack.*

sulfur cement A cement of clay or a similar substance, usually with additives such as sulfur, metallic oxides, silica, or carbon used for sealing joints and coatings in high-temperature areas such as furnace fire boxes.

sullage **1.** Drainage, sewage, or other waterborne waste. **2.** Sediment or silt transported by flowing water.

summary judgment An award of a court by a judge without taking a matter to a formal trial because both the facts in the court record and the law clearly indicate that one party is entitled to a particular verdict.

summer **1.** A horizontal beam supporting floor joists or a wall of a superstructure.

2. Any heavy timber that serves as a bearing surface. **3.** A lintel of a door or window. **4.** A stone set on a column as a support for construction above, such as a base for a column-supported arch.

summertree *See summer.*

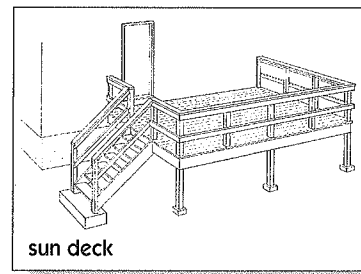
summerwood Wood that grows at the height of a tree's annual growth period. Its thick cells make it stronger than springwood.

sump **1.** A pit, tank, or basin that receives sewage, liquid waste, seepage, or overflow water and is located below the normal grade of the disposal system. A sump must be emptied by mechanical means. **2.** A depression in a roof deck at a drain.

sump pump A small pump used to remove accumulated waste or liquid from a sump. *See also sump.*

sun-bearing angle, or relative solar azimuth Used in solar analysis and design, the solar azimuth angle relative to the direction a building surface faces.

sun deck A deck or flat roof intended for sunbathing.



sun-hours The number of kilowatt-hours per square meter per day.

sunken joint A small, narrow depression on the face of a piece of plywood. Sunken joints occur over joint gaps in the core plies of plywood.

sunk face A building stone with material removed from a portion of the face to give the appearance of a sunken panel.

sunk fillet A fillet formed by a groove in a flat surface.

sunk molding A molding that is slightly depressed below the surface it frames.

sunk panel A panel carved into solid masonry or timber, or recessed below the surrounding molding.

sun shade Feature on the exterior of a building that provides shade.

sunspace Interior building space where temperatures are permitted to vary beyond a limited range of "comfort" conditions. When the mass overheats with warmth from the sun, the additional stored energy is retrained to help warm the building when outdoor temperatures cool off.

sun-tempered buildings

S

sun-tempered buildings

Buildings designed using standard construction methods, but oriented optimally on the site and featuring carefully designed windows to reduce heating load.

super Contraction of superintendent. *See also superintendent.*

superabsorbent materials Materials, often granular, that absorb liquid several times their own weight. An example is humus, which maintains moisture in soil.

superfund The Comprehensive Environmental Response, Compensation and Liability Act.

superheated steam Steam at a temperature higher than the saturation temperature corresponding to the pressure.

superheaters Devices that add heat to saturated fluids.

superimposed drainage **1.** A natural drainage system developed by erosion and having little relation to the area's geological structure. **2.** A man-made drainage system developed against the existing geological structure.

superintendent The contractor's representative who is responsible for field supervision, coordination, completion of the work, and sometimes is also responsible for the prevention of accidents.

superplasticizer Concrete admixture that adds to the concrete's workability despite low water-cement ratio.

superstructure **1.** The part of a building or other structure above the foundation. **2.** The part of a bridge above the beam seats or the spring line of an arch.

supervised devices Devices that are monitored for problems in function or communication.

supervision Direction of work performed by the contractor's (or others') workers on site, as specifically defined by the contract.

supervisory alarm An alarm that conveys a problem in communications with a supervised device.

supervisory control and data acquisition (SCADA system) A computer system used in industry to monitor and control facility operations and status. The automation capabilities of a SCADA system provide early detection of developing problems and improve efficiency in acquiring data and generating reports.

supplemental agreement A change to an existing contract accomplished by the mutual action of the parties.

supplemental authorization
A written agreement that authorizes a modification to a service contract.

supplemental conditions
See supplementary conditions.

supplemental general conditions
Written modifications to the general conditions that become part of the contract documents.

supplemental instructions to bidders
Written modifications to the instructions to bidders that become part of the bidding requirements.

supplemental services Services described in the *schedule of designated services* that are outside the normal range of services, including renderings, energy studies, value analyses, project promotion, and expert testimony.

supplementary conditions (supplemental conditions) A portion of the contract documents that supplements, modifies, changes, adds to, or deletes from provisions stated in the general conditions.

supplied air respirator (SAR)
A breathing apparatus, connected by a long air hose either to a source of compressed air or to an air pump.

supplier A person or entity who supplies materials or equipment from off the

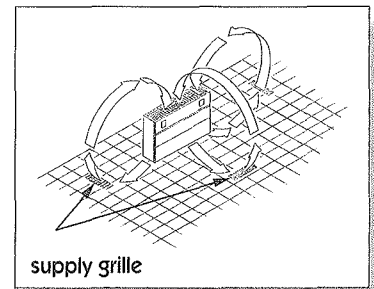
site for the work, including specially fabricated work. *See also vendor.*

supply air The conditioned air delivered to a space or spaces.

supply air outlets Air terminals (such as grilles and diffusers) for the discharge of supply air.

supply fixture unit A measure of the probable demand on a water supply by a particular type of plumbing fixture. The value depends on the volume of water supplied, the average duration of a single use, and the number of uses per unit time.

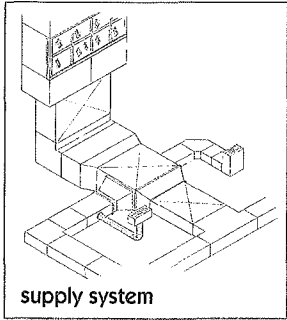
supply grille A grille through which conditioned air is delivered to a space.



supply line In a hot water heating system, the pipe that carries water from the water heater to individual heating units.

supply mains **1.** The pipes that bring water, gas, or other elements into a building. **2.** The pipes through which the heating or cooling fluid flows from the source of heating or cooling to the laterals or risers leading to heating or cooling units.

supply system The connected ducts, plenums, and fittings through which conditioned air is transferred from a heat exchanger to the space or spaces to be conditioned.



suppressed pine (blackjack pine, bull pine) Small ponderosa pine that has grown under adverse conditions. It usually has dark bark, as opposed to the reddish bark found on most mature ponderosa pine.

supreme A grade in Idaho white pine equivalent to B & Better 1&2 clear, the highest grade of select lumber.

surbase A decorative molding at the top of a baseboard molding or pedestal base.

surcharge load A force or combination of charges acting on the upper level of a retaining wall.

surety An individual or company that provides a bond or pledge to guarantee that another individual or company will perform in accordance with the terms of an agreement or contract.

surety bond A bond or pledge made by an individual or company that guarantees another individual's or company's performance according to a contract's terms.

surface, specific See specific surface.

surface active Having the ability to modify surface energy and to facilitate wetting, penetrating, emulsifying, dispersing, solubilizing, foaming, and frothing of other substances.

surface-active agent An additive to a concrete mix to reduce the surface tension of the mixing water and facilitate wetting, penetrating,

emulsifying, dispersing, solubilizing, foaming, and frothing of other additives.

surface area See specific surface.

surface bonding A method of bonding masonry that involves first laying masonry units with no mortar or cement between the blocks, and then coating the surface with a fiber-reinforced mortar.

surface burning characteristic A rating of interior and surface finish material providing indexes for flame spread and smoke developed.

surface course The top course of asphalt pavement; the wearing course.

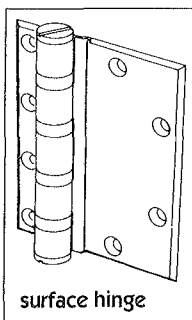
surface drain A drain that eliminates water that pools around the foundation of a home. Also referred to as a superficial peripheral drain, it consists of a trench sloped away from the foundation, lined with plastic, and filled with crushed rock.

surfaced sizes Sized lumber may be rough, surfaced, or partly surfaced on one or more faces.

surface gauge A metalworker's hand tool with a rod and a pivoting arm that can be raised or lowered to make measurements or to scribe a level line around an object.

surface hardware preparation The reinforcement of a hollow-metal door or frame to receive surface hardware.

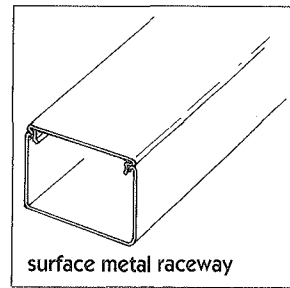
surface hinge A hinge, often ornamental, mounted on a face of a door rather than the edge.



surface impoundment A lagoon or pond designed to hold waste materials and prevent their escape to the environment.

surface latch A latch mounted on a face of a door rather than inset.

surface metal raceway Any surface-mounted furrow or channel constructed of metal to house and protect electrical conductors.



surface moisture (free water, surface water) Free water retained on surfaces of aggregate particles and considered to be part of the mixing water in concrete, as distinguished from absorbed moisture.

surface planer A machine used to plane and smooth the surface of materials such as wood, stone, or metal.

surface retarder A retarder applied to a form, or to the surface of freshly mixed concrete to delay setting of the cement in order to facilitate construction joint cleanup or to facilitate production of exposed aggregate finish.

surface tension That property, due to molecular forces, in the surface film of all liquids that tends to prevent the liquid from spreading.

surface texture Degree of roughness or irregularity of aggregate particles or of the exterior surfaces of hardened concrete.

surface vibrator A vibrator used for consolidating concrete by application to the top surface of a mass of freshly mixed concrete.

surface voids

S

surface voids Cavities visible on the surface of a solid. *See also* bug holes.

surface water *See* surface moisture.

surface wiring switch An electric switch intended for mounting on a surface, such as a wall post, with most of the body of the switch exposed.

surfacing 1. The upper wearing or protective layer of materials, such as on a roof or road. *See also* surfacing weld.

surfacing weld A deposit of weld metal on the surface of a material to provide desired dimensions or properties.

surfactant Chemicals that change the properties of surfaces with which they come in contact. In construction, surfactants are used as wetting or spreading agents and to facilitate the mixture of normally incompatible substances. They also affect the emulsification characteristics and alter the behavior (the dispersion, suspension, or precipitation) of pesticides in water. In environmental remediation, a surfactant is used to solubilize contaminants and mobilize the highly contaminated fines material. *See also* anionic surfactant and non-ionic surfactant.

surform tool A hard tool similar to a file with a surface of sharp cutting teeth pitched at an angle of about 45° which removes surface wood like a plane.

surge A transient voltage effect that causes a sudden, undesirable rise or fall in current.

surge arrester A protective electrical device used to absorb overvoltage surges so that circuitry and equipment are not damaged.

surge drum *See* accumulator.

surge header *See* accumulator.

surge pile or bin Stored aggregate or asphaltic concrete awaiting later use.

surge tank A tank in a water supply system used to absorb water during a sharp pressure rise or to supply water in a sudden pressure drop.

survey 1. A topographic or boundary mapping of a job site. 2. Taking measurements of an existing building. 3. A building use-of-space analysis. 4. The process of identifying the owner's requirements. 5. The investigation and reporting of necessary project data. 6. The examination of the physical or chemical characteristics of the site.

surveying The measurement of distances, elevations, or angles of the earth's surface, including natural and man-made features; usually for the preparation of a plan or map.

surveyor An engineer or technician skilled in surveying.

surveyor's arrow *See* chaining pin.

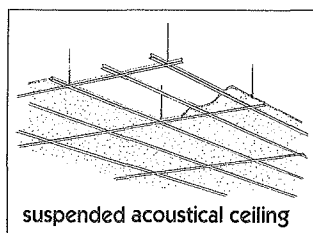
surveyor's level *See* level (1.).

survey stakes Small pieces of wood, usually 1" x 2" or 2" x 2" that have been cut and pointed for driving into the ground to mark a survey line or some boundary of construction.

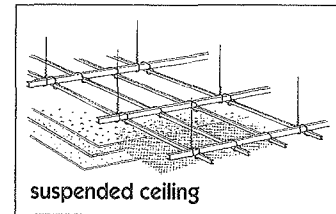
survey traverse A sequence of lengths and angles between points on the earth established and measured by a surveyor. A survey traverse is used as a reference in making a detailed survey.

suspended absorber A sound-absorbing assembly designed for overhead suspension in an area.

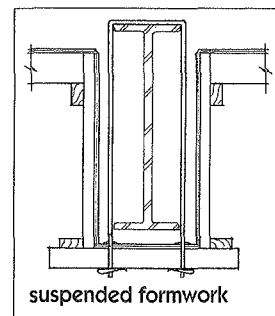
suspended acoustical ceiling A ceiling designed to be sound absorbent and to be hung from the structural slab or beams in an area.



suspended ceiling (dropped ceiling) A finished ceiling suspended from a framework below the structural framework.



suspended formwork Formwork suspended by hangers from a structural system.

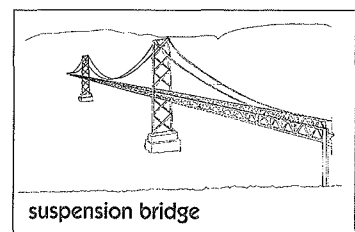


suspended metal lath A system in which metal lath is attached to a light framing system that, in turn, is hung from a structural slab or beam.

suspended span A span supported by two cantilevers or a cantilever and a column or pier, used mainly in bridges and some roofs.

suspended-type furnace A unit furnace designed to be suspended from a floor or roof and to supply heated air through ducts to areas other than that in which the furnace is located.

suspension bridge A bridge with a deck suspended from cables that are typically raised on towers.

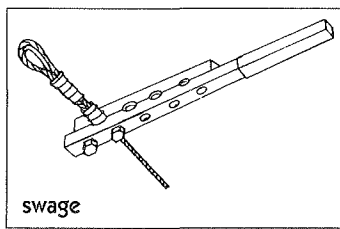


suspension of work A situation in which the contractor must stop performance of the contract work.

suspension roof A roof system supported by cables attached to a frame.

sustainable design Selecting technologies and materials and using them in a manner that avoids depleting natural resources. Considers material durability and sustainability, which involves not only the energy and environmental costs to replace the materials, but availability and rate of regeneration.

swage **1.** A tool or die used to bend or form cold metal. **2.** A tool used to set the teeth of a saw by bending each one to the proper transverse angle.



swale **1.** A shallow depression, in a flat area of land, that may be artificial and used in a storm water drainage system.

2. A low tract of land, usually marshy.

swan-neck **1.** The connector between a gutter outlet and the downspout.

2. The curved portion of the handrail of a stair connecting the rail to a newel post.

swaybrace A diagonal brace used to resist wind or other lateral forces. *See also* bracing and X-brace.

sweating **1.** A soldering technique for joining metal parts. **2.** A gloss that develops on a dull, or matte, paint or varnish film and is caused by rubbing the dry film. **3.** A collection of condensation moisture on a surface that is below the dew point of the air.

sweat joints In plumbing, the union of two copper pipes made by coating the pipes with a tin-based solder, fitting

them together, and applying heat to the joint, fusing the pipes together.

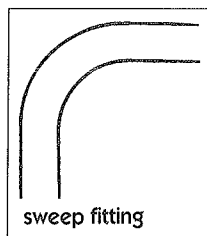
sweat-out A defective condition in gypsum plaster, characterized by a soft damp area surrounded by dry plaster, and usually caused by poor air circulation.

swedge bolt An anchor bolt used in concrete or mortar.

sweep **1.** The curvature or bend in a log, pole, or piling; classified as a defect.

2. A bend in an electrical conduit.

sweep fitting Any plumbing fitting with a large radius curve.



sweep lock A device used to secure two sections of sash. One part is a flat lever attached to the upper sash; the other is a receiving catch attached to the lower sash.

sweep strip A flexible weather-stripping used on the top and bottom edges of a revolving door.

sweetheart deal A contract between an employer and a union that grants concessions to one party or the other in order to prevent a rival union from working on the site.

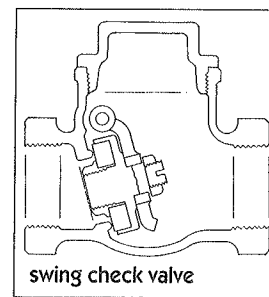
swell factor The ratio of the weight or volume of loose excavation material to the weight or volume of the same material in place.

swelling A volume increase caused by wetting and/or chemical changes.

swift A reel or turntable on which prestressing tendons are placed to facilitate handling and placing.

swing **1.** The movement of a door on hinges on a pivot. **2.** The rotation of a power shovel on its base.

swing check valve A check valve with a hinged gate to permit fluid to flow in one direction only; used mostly where fluid velocities are low.

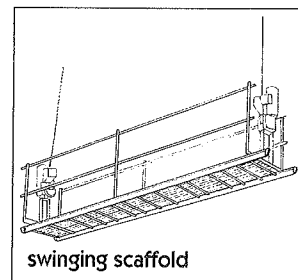


swinging door *See* double-acting door.

swinging joint A type of joint in threaded pipe that allows for expansion and contraction without stressing the piping.

swinging latch bolt A latch bolt hinged to a lock or door and operated by swinging rather than sliding.

swinging scaffold A scaffold suspended from a roof by hooks, and a block and tackle.



swing joint An arrangement of screwed fittings to allow for movement in a pipeline. Commonly used for setting correct elevations in pop-up sprinkler head irrigation systems.

swing leaf **1.** The active leaf in a double door. **2.** A hinged sash in a casement window.

swing offset In surveying, a method of referencing a point by swinging bisecting arcs, with a tape, from established points nearby.

swing saw

S

swing saw (pendulum saw) A power saw for ripping, deep cutting, or cross cutting that is mounted on a frame and pushed down into the material to be cut.

swing scaffold See **swinging scaffold**.

swing space A space temporarily occupied by building users away from areas that are undergoing renovation. Swing space can be new space built before renovations or existing space that has already been renovated.

swing-up garage door A rigid overhead door that opens as one unit.

swirl The irregular, curving pattern in wood at knots or crotches.

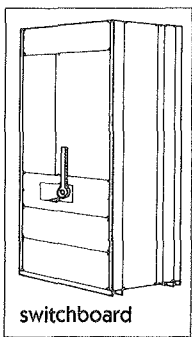
swirl finish (sweat finish) A nonskid texture imparted to a concrete surface during final troweling by keeping the trowel flat and using a rotary motion.

Swiss hammer See **rebound hammer**.

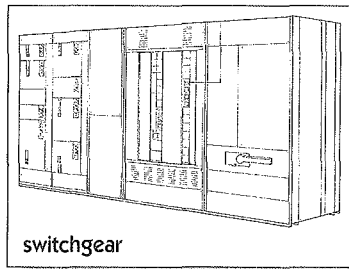
switch A device used to open, close, or change the connection of an electric circuit.

switch-and-receptacle An electrical outlet controlled by its own on-off switch. When the switch is turned off, the flow of electricity to the plug is terminated.

switchboard A large panel, frame, or assembly with switches, overcurrent and other protective devices, fuses, and instruments mounted on the face and/or back. Switchboards are usually accessible from front or rear and are not intended to be mounted in cabinets.



switchgear Any switching and interrupting devices combined with associated control, regulating, metering, and protective devices, used primarily in connection with the generation, transmission, distribution, and conversion of electric power.



switch plate A flush plate used to cover an electric switch.

switch-start fluorescent lamp See **preheat fluorescent lamp**.

swivel joint A special pipe fitting designed to be pressure-tight under continuous or intermittent movement of the equipment to which it is connected.

swivel spindle A spindle in a door latch unit with a joint in the middle of its length to allow one knob to be fixed by a stop; works while the other knob operates the latch.

sycamore A tough, yellowish wood with a close, firm texture, that takes a fine polish and is used for flooring and veneer.

symmetrical construction (balanced construction) A plywood panel in which the plies on one side of the center ply are balanced in thickness with those on the other side.

synchronous motor A constant-speed electric motor, usually direct current. The operational speed is equal to the frequency of supply voltage divided by one-half the number of cycles or windings on the machine.

syneresis The contraction of a gel, usually evidenced by the separation from the gel of small amounts of liquid; a process

possibly significant in the bleeding and cracking of fresh Portland cement mixtures.

synergy Interaction of substances, materials, or systems that produces effects or results not caused by any of the individual substances or entities on its own.

synthetic gypsum A chemical product consisting primarily of calcium sulfate dehydrate derived primarily from an industrial process.

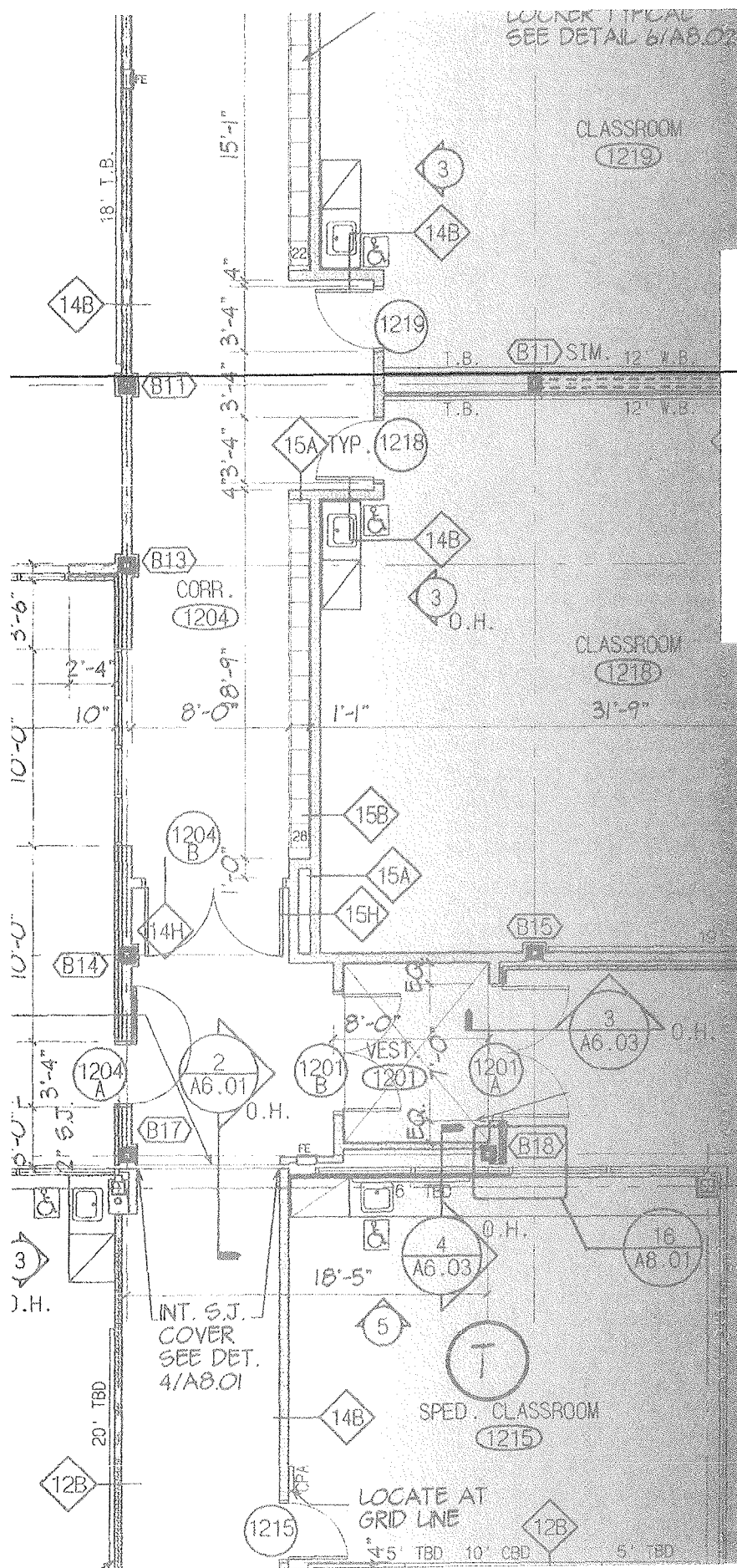
synthetic resin Any of a large number of products similar to natural resins and made either by polymerization or condensation or modifying a natural material.

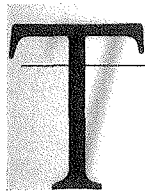
synthetic rubber A chemically manufactured elastomer, rubber-like in its degree of elasticity.

system effect factor A pressure loss factor that recognizes the effect of fan inlet and outlet restrictions that influence fan performance.

Système International D'unités or International System of Units The contemporary metric system of international standard measures.

systems A process of combining prefabricated assemblies, components, and parts into single assembled units utilizing industrialized production, assembly, and other methods.





Abbreviations

The abbreviations listed below are commonly used in the construction industry.

t temperature, time, ton	thp thrust horsepower	TTY text telephone (teletypewriter)
T tee, township, true, thermostat	THRU through	TU trade union, transmission unit
Ta tantalum	Ti titanium	TUB tubing
TAD thoroughly air dried	TL transmission loss	TV terminal velocity
T&C threaded and coupled	tlr trailer	twp township
T&G, T and G tongue-and-groove	TM technical manual	TYP typical
T&T truck and trailer	tn ton, town, train	
TAT turnaround time	TN true north	
tb turnbuckle	tnpk, tpk turnpike	
TB through bolt	TNT Trinitrotoluene	
TBE threaded both ends	to take-off (estimate)	
TBR timber	TOC total organic carbon	
TC terra-cotta	TOE thread one end	
TCE Trichloroethylene	TOL tolerance	
TCLP Toxicity Characteristic Leaching Procedure	T-O-L Thread-O-Let	
TDD (TTY) Telecommunications Devices For The Deaf (teletypewriter)	tonn tonnage	
Te tellurium	topog, topo topography	
TE table of equipment, trailing edge	TOT total	
tech technical	tp tar paper	
TEL telephone	TPH total petroleum hydrocarbon	
TEM Total Energy Management	tps townships	
temp temperature, temporary	tr tread	
TEMP temperature	trans transom	
TER terrazzo	TRANS transformer	
TEU technical escort unit	transp transportation	
tf tar felt	trf tuned radio frequency	
TG&B tongued, grooved, and beaded	trib tributary	
tg&d tongued, grooved, and dressed	trib ar tributary area	
TH true heading	ts tensile strength	
therm thermometer	TSCA Toxic Substance Control Act	
THERMO thermostat	TSD treatment, storage, and disposal	
THK thick	TSDF treatment, storage, and disposal facility	
thou thousand	TSS total suspended solids	

T Definitions

tabby A type of concrete consisting of a mixture of lime and water, with shells, gravel, or stones used to make blocks for masonry.

tabia Compacted soil mixed together with lime and small stones.

table joint A joint in stonemasonry in which a projection cut into a stone fits into a channel cut into the stone below.

table joint Any of various joints in which the fitted surfaces are parallel to the edges of the pieces being joined, with a vertical break in the middle. This break is termed the table. Such joints are used in lengthening structural members.

table-mountain pine *Pinus pungens*. This pine is found primarily in the Appalachian states. It is not a commercial species.

table saw A power saw, with a circular blade, set below a table. The blade projects above the table through a slot, with the projection height adjustable to suit the work.

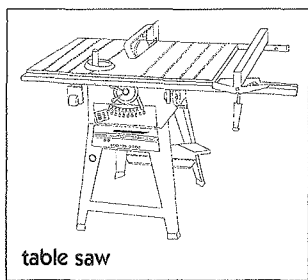


table saw

tachometer A device for measuring rotation speed. Usually refers to revolutions per minute (RPM) of a revolving shaft.

tachymeter An instrument used by surveyors that determines distance, direction and elevation variation with one observation.

tack **1.** A short, sharp-pointed nail with a large head used in laying linoleum and

carpets. **2.** A strip of metal, usually lead or copper, used to secure edges of sheet metal in roofing. **3.** The property of an adhesive that allows it to form a strong bond as soon as the parts and adhesive are placed in contact. **4.** To glue, weld, or otherwise fasten in spots.

tack coat A coat of emulsion that enhances the bonding of two layers of asphalt.

tack cloth See **tack rag**.

tack dry The state of an adhesive at which it will adhere to itself although it seems dry to the touch.

tack-free dry The point where paint or varnish is no longer sticky.

tack hammer A lightweight hammer used to attach small fasteners to finish work.

tackle A mechanism for moving materials, including raising or lowering them on a rope and pulley block.

tackless strip A metal or wood strip, with many small upstanding hooks, fastened to a floor or stair. A carpet is stretched beyond the strip. Hooks engage the backing and hold the carpet in place.

tack rag A rag treated with slow-drying or nondrying varnish or resin, and used to clean dirt and foreign matter from the surfaces of articles before they are painted.

tack rivet A rivet used to hold work steady during riveting.

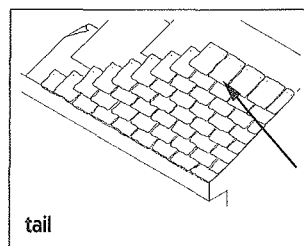
tack weld **1.** A temporary weld to position parts. **2.** One of a series of short welds used where a continuous weld is unnecessary.

Taft-Hartley Act An act of the Congress of the United States of 1947, introduced by Senator Taft and Representative Hartley, and titled the Labor Management Relations Act. This legislation lessened the power of management over labor and provided that labor participate in some management decisions.

tag A strip of sheet metal folded on itself and used as a wedge to hold metal flashing in a masonry joint.

tagline **1.** A line that runs from a crane boom to a clamshell bucket and keeps the bucket firmly in position during operations. **2.** A safety line used by workers performing a job at high elevations or in other dangerous locations where a fall could be injurious. **3.** Rope attached to a heavy member, such as a truss or beam, or a piece of equipment being lifted. The rope is used by a worker on the ground to control the item as it swings up.

tail **1.** The bottom part of a slate shingle. **2.** The part of the roof rafter that extends beyond the wall line. **3.** The section of a stone step that extends into a wall.



tail bay **1.** The area between a wall and the nearest column line. **2.** In a framed floor or roof, the area between an end wall and the nearest girder.

tail beam A short beam or joist with one end set in a wall and the other supported by a header.

tail cut **1.** A cut in the lower end of a rafter where it overhands the wall; sometimes ornamental. **2.** The seat cut at the lower end of a rafter.

tailgate The hinged, rear wall of a dump truck through which materials are dumped.

tail in

T

tail in **1.** To secure or fasten one end of a timber, such as a floor joist, at a wall. **2.** To secure one end or edge of a projecting unit of masonry, such as a cornice.

tailing iron A steel member, built into a wall, to take the upward thrust of a cantilevered member that projects from the wall.

tailings **1.** Stones left on a screen used to grade material, as in a crushing operation. **2.** The waste material or residue of a product.

tailpiece **1.** A subordinate joist, rafter, or the like supported by a header joist at one end and a wall or sill at the other. **2.** A handle on the bar end of a two-man power saw.

tail pipe The outlet pipe from an evaporator.

tailwater Water that flows downstream from a building site or structure.

take-off (takeoff, quantity takeoff) **1.** The process in which detailed lists are compiled, based on drawings and specifications, of all the material and equipment necessary to construct a project. The cost estimator uses this list to calculate how much it will cost to build the project. **2.** The activity of determining quantities from drawings and specifications. *See also* **quantity survey**. **3.** The actual quantity lists.

take-up The process of plaster substrate absorbing water from plaster during installation.

take-up block A pulley block rigged so that its weight or a spring will prevent slack in the lines passing through it.

talc A mineral with a greasy or soapy feel. It is very soft, having the composition $Mg_3Si_4O_{10}(OH)_2$. *See also* **masonry cement**.

talus **1.** A slope formed of rock debris at the bottom of a steep slope. **2.** The slope of a wall.

tamarack (eastern tamarack)
Larix laricina. This species is common in the northeastern states. However, its

range extends as far as southern Alaska. As a member of the larch family, it is one of the few conifers that sheds its needles in the fall.

tambour door A sliding door made of thin folding panels on a flexible backing.

tamp To press a loose material such as soil or fresh concrete into a firm, compact mass by pounding repeatedly on it.

tamper **1.** An implement used to consolidate concrete or mortar in molds or forms. **2.** A hand-operated device for compacting flooring topping or other unformed concrete by impact from the dropped device in preparation for strikeoff and finishing. Contact surface often consists of a screen or a grid of bars to force coarse aggregates below the surface that prevents interference with floating or trowelling. *See also* **jitterbug**.

tamping The operation of compacting freshly placed concrete by repeated blows or penetrations with a tamping device.

tamping rod *See* **rod, tamping**.

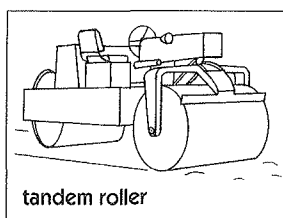
T&C Threaded and coupled; an ordering designation for threaded pipe.

tandem **1.** A pair of moving parts in which one part follows the action of the other, such as tandem rollers. **2.** A vehicle made up of two units attached to one another, as the cab and trailer of a truck.

tandem dozing Two side-by-side dozers working as one.

tandem drive A vehicle with three axles, two of which are driving axles.

tandem roller A unit of two rollers of equal diameter set one behind the other on the same track.



tandem roller

tandem wiring (master-slave wiring)

A method of wiring two or more luminaires with one ballast. It saves on installation costs, and electricity.

T&G joint *See* **tongue-and-groove joint**.

tang The narrow extending tongue or prong on an object by which it is affixed to another piece, such as the tongue that secures a chisel to a handle.

tangent A straight line or curve that touches another curve at a single point without crossing the curve.

tangential In reference to lumber, it refers to sawing the truck or branch in a longitudinal fashion, perpendicular to the growth rings. Flat-grained lumber is produced by this method.

tangent modulus *See* **modulus of elasticity**.

tangibles Things that can be quantitatively measured or valued, such as items of cost and physical assets.*

tank farm One contiguous site that may contain multiple tank fields, typically used for defining and classifying underground storage tanks and aboveground storage tanks.

tank field One continuous cluster of tanks.

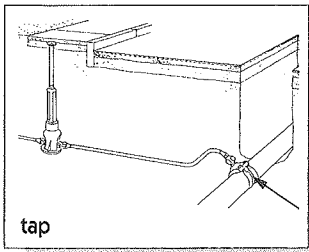
tank group One or more tanks within a tank field.

tankless water heater (instantaneous heater) A water heater system that relies on instantaneous increases of power to heat water as it is demanded. It has only a mini-assembly of heater coils 36" high or less, and provides an endless amount of hot water. It stores only the water within the coils, and is consequently energy efficient.

tannin A soluble compound found in all woods that can cause staining.

tap **1.** A connection to a water supply. **2.** A faucet. **3.** A tool used to cut internal threads. **4.** To cut internal threads in a nut or hole.

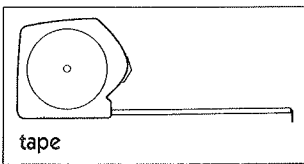
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tap bolt A machine bolt that screws into a hole in material without requiring a nut or internal threads. A fully threaded bolt.

tap borer A hand tool used to bore tapered holes, as in a lead pipe for a connection.

tape **1.** A flexible measuring strip of fabric or steel marked off with lines similar to the scale of a carpenter's rule, usually contained in a case to allow rewinding or retracting after use. **2.** One of a number of adhesive-backed fabric or paper strips of assorted width used for various purposes within construction systems.



tape balance A balancing device on a sash that counterbalances the weight of the sash by force of a metal tape coiled around a spring-loaded reel.

tape correction A correction that is figured into a distance measured by a tape in order to compensate for errors resulting from the condition of the tape or the manner in which it was handled.

tape joint A flat joint that is reinforced with tape and sealed with joint compound to provide additional strength.

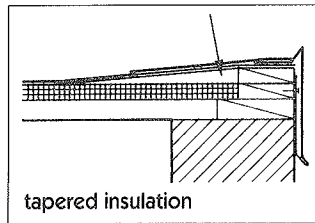
tape measure (tapeline) A steel strip used by builders and surveyors to measure distances, usually graded in feet, tenths, and hundredths of a foot for use in

surveying and engineering. Or, graded in feet, inches, and fractions of an inch for use in the building trades.

taper A gradual diminution of thickness, diameter, or width in an object.

tapered edge strip A tapered insulation strip used to elevate roofing components at the roof's perimeter and penetrations.

tapered insulation Preformed rigid insulation used on roofs at drains or roof intersections requiring a slight change in elevations at the surface.



tapered tenon A tenon decreasing in width from the root to the projecting end.

taper file A triangular file equipped with fine teeth, used to sharpen saws.

tapersawn A trade name used by the Red Cedar Shingle and Handsplit Shake Bureau for shakes fully sawn on both faces.

tapershank The tapered end of a tool that fits into a socket.

tapersplit Shakes produced by using a mallet and froe, a sharp steel blade, to obtain split faces on both sides. The taper of the shake is a result of reversing the block and splitting the shake from a different end after each split.

taper thread A screw thread developed on a frustum of a cone, used in piping systems to ensure a tight joint, also used on some fasteners such as a screw or plug for a hole with worn threads.

taper tie A tapered steel rod used to hold concrete forms in place. When the forms are being stripped, the tie is

removed by hitting the small diameter end and forcing it out through the hole created by the larger end.

tapia An adobe-like building material primarily made from earth or clay.

taping The process of measuring the distance across ground with a chain or tape.

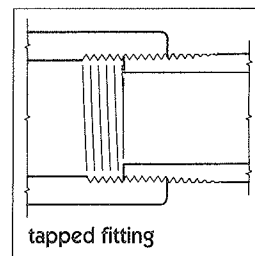
taping compound (embedding compound) A compound specifically formulated and manufactured for use in embedding of joint reinforcing tape at gypsum board joints.

taping knives Drywall finishing knives that range in width from 4" to 24". The smaller knives (4"-6") are utilized for taping, spotting fasteners, taping angles and finishing. The wider blade knives are used in finishing. All have square corners.

taping pin See chaining pin.

taping strip **1.** A strip of roofing felt laid over the joint between adjacent precast concrete units before roofing operations. **2.** A strip of tape used to cover the joint between adjacent roof insulation boards.

tapped fitting Any fitting that has one or more tapped internal threads to receive threaded pipe.



tapped tee A cast-iron soil pipe tee with a tapped outlet.

tapping machine A machine producing a series of uniform impacts on a floor surface, used to measure sound transmission of a floor ceiling assembly.

tapping screw See sheet-metal screw.

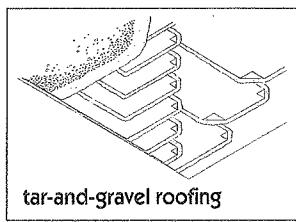
tap screw See tap bolt.

tar

T

tar A dark, glutinous oil distilled from coal, peat, shale, and resinous woods, used as surface binder in road construction and as a coating in roof installation. *See also* coal-tar pitch.

tar-and-gravel roofing Built-up roofing made up of gravel or sand, poured over a heavy coating of coal-tar pitch applied to an underlayer of felt.



tar cement Heavier grades of tar for use in construction and maintenance of bituminous concrete pavements.

tare The weight of a rail car, truck, or other conveyance when empty. The tare is deducted from the gross weight of the vehicle and its contents to determine the weight of the freight in figuring freight rates.

target A red-and-white target mounted on a surveyor's leveling rod; used to facilitate the sighting of the markings on the rod by the transit man.

target date Date imposed on an activity or project by the user or client that constrains or otherwise modifies the network analysis. There are two types: target start dates, and target finish dates.*

target hardening Prohibiting entry or access to a facility by installing security hardware such as keyed or tamper-proof window locks, deadbolts for doors, interior door hinges, and rock-guard shields for windows.

target leveling rod A leveling rod fitted with a target to facilitate setting or reading.

target price contract A contract where a contractor and owner agree on a certain fixed, lump-sum price, the *target*

price, and then the contractor tries to execute the contract at or below that price. The contractor typically shares all his estimated project costs, markups, and expected profit with the owner.

target rod *See* leveling rod.

target schedule A schedule devised or selected as an objective measure against which actual performance can be gauged.*

tarmac (tarmacadam) *See* macadam.

tar paper *See* asphalt-prepared roofing.

tarpaulin A waterproof cloth, generally used in large sheets to cover and protect construction materials or other goods stored outdoors.

tarred felt *See* asphalt felt.

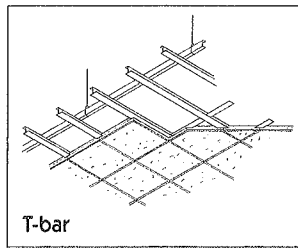
task 1. A cohesive, individual unit of work that is part of the total work needed to accomplish a project.
2. Well-defined component of project work; a discrete work item. There are usually multiple tasks for one activity.*

task lighting Lighting directed to a specific work surface or area.

tax abatement A reduction in taxes on real property, usually accomplished by reducing the assessed value.

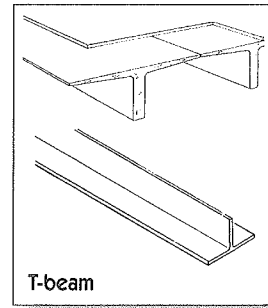
taxes payable Tax accruals due within a year.*

T-bar A light-gauge, T-shaped member used to support panels in a suspended acoustical ceiling.



TBE Threaded both ends. Term used when specifying or ordering cut measures of pipe.

T-beam A beam composed of a stem and a flange in the form of a "T"; usually of reinforced concrete or rolled metal.



teak Wood from trees in southeastern Asia, India, and Burma that is dark, heavy, and particularly resistant to attack of insects; used for exterior construction, plywood, flooring, and decorative paneling.

teamster A member of the Teamster's Union.

tearoff (ripoff) The stripping off of all roof coverings down to the wood.

teazel An angle post used in the construction of a timber-frame building.

technical trader A futures trader who bases his buying and selling decisions primarily on conditions that develop within the futures market rather than on developments in the market for the physical commodity.

teco A metal strap used to secure roof rafters and trusses to the top horizontal wall plate. Sometimes referred to as a hurricane clip.

tee 1. An elaborately turned finial in the shape of an umbrella; used as finishing ornamental on pagodas, stupas, and totes. 2. *See* pipe tee. 3. A metal structural member with a T-shaped cross section. 4. A pipe fitting that has a side port at right angles to the run.

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tee beam See **T-beam**.

tee bevel See **bevel square**.

tee handle A T-shaped handle used in place of a doorknob to operate the bolt on a door lock.

tee head See **T-head**.

tee hinge See **T-hinge**.

tee iron **1.** A piece of flat, heavy sheet metal, shaped into a "T" and equipped with drilled, countersunk holes; used to reinforce joints in wood construction. **2.** A steel T-beam section.

tee joint A joint between two members that intersect at right angles to form a T-shaped joint.

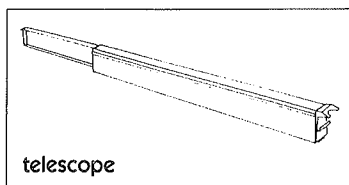
tee nut A fastening device that consists of an internally threaded cylinder and a disk with prongs around the perimeter of the bottom. The prongs are driven into wood to hold the nut steady while a bolt is inserted.

tee square See **T-square**.

telegraphing Grain or other defects showing through on a smooth plywood panel.

telephone exchange The switching center for interconnecting telephone lines that terminate at the central station switch.

telescope To insert or slide one piece inside another.



telescoping boom A boom that can be extended as a telescope from within itself, eliminating the need to manually add sections to lengthen its reach.

telltale Any device designed to indicate movement of formwork or a point along the length of a pile under load.

tellurometer An electronic instrument that measures distance by transmitting

microwaves to an object and determining how fast they bounce back. The time measurement is then converted to feet and inches.

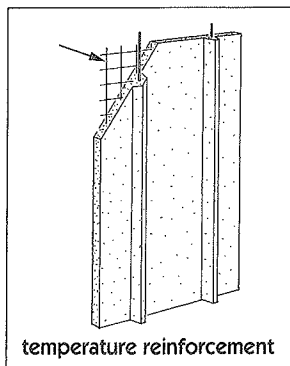
temper **1.** To bring clay mortar or plaster to the proper consistency by moistening and mixing. **2.** To make stronger through processes of heating and cooling. In metals, stress is relieved without affecting hardness by heating to a temperature of 500°F. Other processes use 1000°F to heat materials and which are then allowed to cool naturally in order to soften them and reduce brittleness. **3.** The process of treating a wood surface with liquid resins or oils to increase resistance to water damage.

tempera A fast-drying, water soluble paint composed of eggs, gum, pigment, and water, used chiefly for painting murals.

temperature, curing The temperature to which an assembly with adhesives is subjected in order to cure the adhesive.

temperature differential The difference in temperature between two spaces within a building, or between the indoor and outdoor temperature. Temperature differential causes natural convection currents and air to migrate through cracks and open doors, windows, or other means of egress.

temperature reinforcement Reinforcement designed to carry stresses resulting from temperature changes.



temperature rise The increase of temperature caused by absorption of heat or internal generation of heat, as by hydration of cement in concrete.

temperature rise period The time interval during which the temperature of a concrete product rises at a controlled rate to the desired maximum in autoclave or atmospheric-pressure steam curing.

temperature steel A steel reinforcement used within concrete slabs and other units of masonry to reduce the chances of cracking caused by temperature changes.

temperature stress Stress in a structure or a member due to changes or differentials in temperature in the structure or member.

temperature stress rod Concrete reinforcing that is provided to control cracks that are caused by shrinkage and temperature stresses.

tempered air Air that is warmed before being distributed.

tempered board A strong, durable composition board such as wood fiber that has been impregnated with drying oil or an oxidizing resin, and then cured with heat to improve its hardness and moisture resistance.

tempered glass Glass that is prestressed by heating and then rapidly cooled, a process that makes it two to four times stronger than ordinary glass. It shatters into pebbles instead of slivers.

tempered hardboard See **tempered board**.

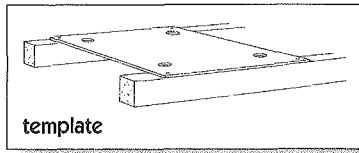
tempered water Warm water between 85°F and 110°F.

tempering The addition of water and mixing of concrete or mortar as necessary to bring it to the desired consistency during the prescribed mixing period. For mixed concrete, this will include any addition of water as may be necessary to bring the load to the correct slump on arrival at the work site, but not after a period of waiting to discharge the concrete.

template

T

template (templet) **1.** A thin plate or board frame used as a guide in positioning or spacing form parts, reinforcement, or anchors. **2.** A full-size mold, pattern, or frame shaped to serve as a guide in forming or testing contour or shape. **3.** A member of stone, metal or wood that is embedded in a wall in order to support a horizontal member or beam to distribute the load.

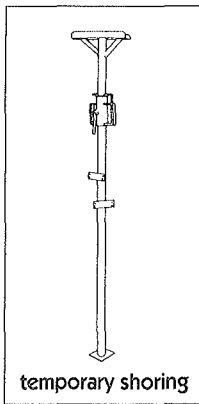


template hardware Hardware that is an exact match for a master template drawing, conforming to the spacing of air holes and dimensions.

temporary construction cost

Includes costs of erecting, operating, and dismantling nonpermanent facilities, such as offices, workshops, etc, and providing associated services such as utilities.*

temporary shoring Shoring installed to support a structure while it is being built, and removed when construction is finished.



temporary stress A stress that may be produced in a precast concrete member or a precast concrete component

during fabrication or erection, or in cast-in-place concrete structures due to construction or test loadings.

tenancy Occupation of property by one who has less than a fee interest, whether a life tenancy arranged by agreement with the owner or heirs, or a tenancy created by lease for a stated term of years.

tenancy at will A tenancy that is established not by written agreement (a lease), but by oral agreement between the parties. Typically, the tenancy is for an unspecified amount of time. Either party may end the tenancy at any time. Rent is often paid weekly or monthly, and such a pattern may imply a minimum term for the tenancy. If so, the tenancy can normally only be terminated at the end of an established interval (for instance, at the end of the week or month).

tenancy by the entirety A special form of ownership that can only be formed between a husband and wife. When a married couple owns real property as tenants by the entirety, their interests in the property are equal, and each has a right to occupy and use the entire property. Neither spouse, acting alone, may sell his/her share of the property as long as the other spouse is alive. A tenancy of the entirety carries the right of survivorship; when one spouse dies, the deceased spouse's share of the property passes to the surviving spouse.

tenancy in common A form of ownership among two or more people, each with equal rights to occupy and use all of the real property owned in common. Although the owners may all fully occupy and use the property, they do not necessarily have equal shares of ownership. A major distinguishing feature of a tenancy in common is that when one owner dies, his or her share does not pass to the surviving owner(s) but, instead, passes to those named in the deceased's will or to the deceased's heirs under the law.

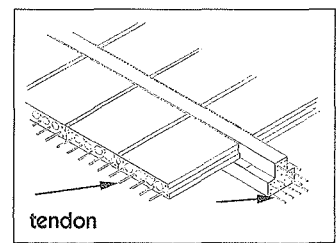
tenant In the broadest sense, one who possesses real property, under any kind of right or title, for any period of time. This broad meaning is used with respect to the different forms of multiple ownership. *See also tenancy in common, joint tenancy, and tenancy by the entirety.*

tenant's improvements

Improvements made to a house or parcel of land by a tenant at his own expense that commonly become a part of the property and cannot be removed by a departing tenant unless the owner gives his consent.

tender **1.** An offer showing a willingness to buy or sell at a specific price and under specific conditions. **2.** In futures, the act on the part of a seller of a contract of giving notice to the clearinghouse that he intends to deliver the physical commodity in satisfaction of a futures contract. **3.** A hooktender. **4.** A railroad car attached to a steam locomotive for carrying fuel and water, or a ship providing similar services in a fleet. **5.** A formal offer of a bid. *See also submit the bid.*

tendon A steel element such as a wire, cable, bar, rod, or strand used to impart prestress to concrete when the element is tensioned.



tendon profile The path or trajectory of the prestressing tendon.

tenement (tenement house)

Any dwelling, but usually an apartment house, that is situated in a poorer section of a city and has fallen into disrepair.

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Tennessee red cedar (eastern red cedar) *Juniperus virginiana*. A pioneer species of wood found in most of the eastern U.S.

tenon A projecting, tongue-like part of a wood member designed to be inserted into a slot or mortise of another member to form a mortise and tenon joint.

tenon-and-slot mortise A glued wood joint formed by a tenon and mortise. Usually the two pieces join at a right angle to each other.

tenoner A machine used to form tenons.

tenon saw (mitre saw) A small backsaw used for cutting tenons.

tenpenny A particular size of nail, generally 3" long with 69 of them to a pound. The term is believed to have originated in England, where nails of the same size once sold for ten pence per hundred.

tensile strain Elongation of a material that has been subjected to tension by pulling or stretching.

tensile strength Maximum unit stress that a material is capable of resisting under axial tensile loading, based on the cross sectional area of the specimen before loading. Tensile strength is often used as a measure of fastener strength; it is the load required to pull open the fastener.

tensile stress Stress resulting from tension.

tensile test A test in which a sample is subjected to increasing longitudinal pulling stress until the material fractures.

tension The state or condition imposed on a material or structural member by pulling or stretching.

tension member A tie or other structural member subjected to tension.

tension reinforcement

Reinforcement designed to carry tensile stresses such as those in the bottom of a simple beam.

tension rod A rod in a truss or structure that connects opposing components and prevents them from spreading.

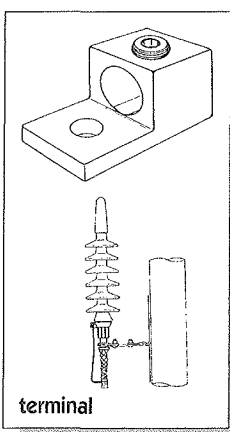
tension wood Defective wood usually cut from the upper side of hardwood branches or leaning trunks. The processed lumber exhibits high longitudinal shrinkage, causing warping and splitting.

ten wheeler A tandem truck having ten wheels, commonly called a bogie. In construction, the term refers to a tandem dump truck.

teratogen A term used in labeling hazardous construction or other materials that adversely affect the human reproductive system.

teredo A marine worm that damages untreated wood by boring holes in it.

terminal **1.** An element attached to the end of a conductor or to a piece of electric equipment to serve as a connection for an external conductor. **2.** A decorative element forming the end of an item of construction. **3.** A point of departure or arrival such as a railway or airport terminal.



terminal box A box, on a piece of electrical equipment, that contains leads from the equipment, ready for connection to a power source. The box is usually provided with a removable cover.

terminal element The fixture that delivers the element, such as water faucet, light fixture, or heat register.

terminal expense An expense incurred by one or both parties to a contract at the time of its termination.

terminal landing The top and bottom elevator landing. (Courtesy of National Elevator Industry, Inc.)

terminal unit **1.** A unit, at the end of a duct in an air-conditioning system, through which air is delivered to the conditioned space. **2.** Devices located near the conditioned space that regulate the temperature and/or volume of supply air to the space.

terminal velocity The average speed of an airstream in an air-conditioning system as it reaches the end of its throw, used as an indicator of comfort level and degree of draftiness.

termination expenses Costs that can be directly connected with the termination of a professional service agreement. Termination expenses may include any compensation earned until the termination occurred.

termination for convenience

The unilateral right of the government to terminate contracts at will.

termination for default A sanction that the government may impose for a contractor's unexcused failure to perform.

termites Insects that destroy wood by eating the wood fiber. Termites are social insects that exist in most parts of the U.S., but they are most destructive in the coastal states and in the Southwest. Termites can enter wood through the ground or above the ground, although the subterranean type is most common in the U.S. They eat the softer springwood first and prefer sapwood over heartwood.

termite shield A sheet of metal used on a foundation wall or pier as a projecting shield to prevent the passage of termites from the ground to a structure.

terms of payment

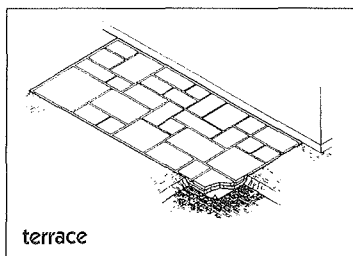
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terms of payment Defines a specific time schedule for payment of goods and services and usually forms the basis for any contract price adjustments on those contracts that are subject to escalation.*

terne metal An alloy of lead, composed of up to 20% tin.

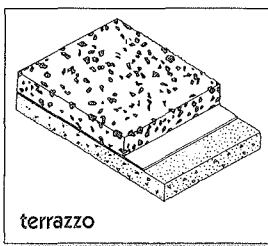
terneplate Sheet steel coated with an alloy of lead and tin, used chiefly in roofing.

terrace 1. An embankment with a level top surface and stabilized side slopes. It may be used for agriculture or paved and/or planted for recreational use. 2. A platform or paved embankment adjoining a building and used for recreational purposes.



terra-cotta Units of hard, unglazed fired clay, used for ornamental masonry.

terrazzo A type of flooring material made from marble or other stone chips set in Portland cement and polished when dry.



tertiary beam A beam that transfers its load to a secondary beam.

tertiary treatment An advanced stage of the wastewater treatment process, employing methods such as ion

exchange, carbon absorption, reverse osmosis, and demineralization of residual solids.

tessera A small square of glass, stone, tile, or marble used in geometric and figurative mosaic work in pavements or floors.

test A trial, examination, observation, or evaluation used as a means of measuring a physical or chemical characteristic of a material, or a physical characteristic of a structural element or a structure.

test case A term used by legal practitioners to refer to a trial whose pleadings and merits have, or possess the potential to form, precedence for future judgments in similar cases.

test cylinder A sample of a concrete mix, cast in a standard cylindrical shape, cured under controlled or job conditions and used to determine the compressive strength of the mix after a specified time interval.

testing Action whereby a portion or sample of a material is subjected to procedures designed to prove performance characteristics.

testing machine A device for applying test conditions and accurately measuring results.

test method The testing procedures used to determine whether a specific product conforms with a particular standard.

test piling A foundation piling that is installed on the site of a proposed construction project and used to conduct load tests to determine the size and quantity of pilings needed for the actual structures.

test pit An excavation made to examine the subsurface conditions on a potential construction site. Samples are taken at specified elevations for lab analysis. *See also* testing.

test plug A device that contains water test pressure in drainage pipes as part

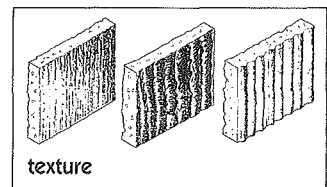
of a process to check plumbing systems for leakage.

test pressure Air pressure or water pressure used in plumbing to test pipes and fittings for strength and watertightness.

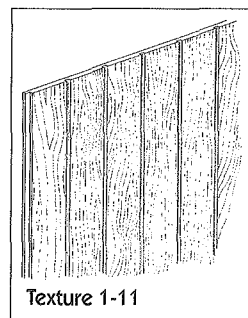
test tee A pipe tee that is inserted into a drainage system to test it for leaks by subjecting it to water pressure.

tetracalcium aluminoferrite A compound in the calcium aluminoferrite series, having the composition $4\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot \text{Fe}_2\text{O}_3$, abbreviated C_4AF , which is usually assumed to be the aluminoferrite present when compound calculations are made from the results of chemical analysis of Portland cement. *See also* brown millerite.

texture 1. The pattern or configuration apparent in an exposed surface, as of concrete or mortar, including roughness, streaking, striation, or departure from flatness. 2. In referring to lumber, it is the grain of the wood.



Texture 1-11 A registered trade name of the American Plywood Association for siding panels with special surface treatments, such as saw-textured, and having grooves spaced regularly across the face.



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texture brick A rough, fired clay brick, often multicolored, commonly used for facing work. *See also* **rustic brick**.

texture cracking Cracking tensile failure, caused by temperature drop in members subjected to external restraints, or temperature differential in members subjected to internal restraints.

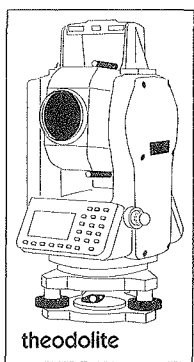
texture float A tool used to give texture to a plaster surface.

texturing The process of producing a special texture on unhardened or hardened concrete.

thatch A roof covering made of straw, red palm leaves, or similar material fastened together to shed water and provide thermal insulation.

T-head **1.** In precast framing, a segment of girder crossing the top of an interior column. **2.** The top of a shore formed with a braced horizontal member projecting on two sides and forming a T-shaped assembly.

theodolite An instrument used in precise surveying consisting of an alidade that is equipped with a telescope, a leveling device, and an accurately graduated horizontal circle. A theodolite may also have an accurately graduated vertical circle.

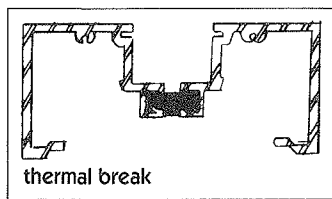


therm A quantity of heat equal to 100,000 Btus.

thermal block The use of low thermal conductance materials to prevent thermal bridges from forming.

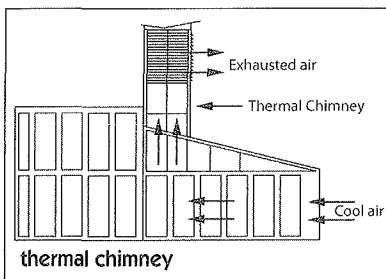
thermal break (thermal barrier)

An element of low conductivity placed between two conductive materials to limit heat flow; for use in metal windows or curtain walls that are to be used in cold climates.



thermal bridge The interruption of a layer of thermal insulation by another material with high thermal conductivity (such as metal).

thermal chimney A chimney that uses solar energy to heat air, which then rises and is exhausted through the roof. A natural convection loop occurs as cooler air is drawn into the building (sometimes through a cool underground duct) to replace the exhausted hot air.



thermal coefficient of expansion

A measure of the expected amount of expansion of a material when heated.

thermal conductance The rate at which heat flows from one surface of a material to the other, usually measured or specified at the rate over a unit area and under a unit temperature differential.

thermal conduction The process of heat transfer through a material by internal molecular action.

thermal conductivity A property of a homogeneous body measured by the ratio of the steady state heat flux, time rate of heat flow per unit area, to the temperature gradient, temperature difference per unit length of heat flow path, in the direction perpendicular to the area.

thermal cutout An overcurrent protective device containing a heater element and a renewable fusible member that opens the circuit. The thermal cutout is not designed to interrupt short-circuit currents.

thermal desorption A process that removes organic contaminants (as vapors or condensed liquids) from soils, sludges, and other solid media, which may then be destroyed in a permitted incinerator or used as supplemental fuel.

thermal diffusivity Thermal conductivity divided by the product of specific heat and unit weight. The term is an index of the facility with which a material undergoes temperature change.

thermal expansion The change in length or volume experienced by a material or mass when subjected to a change in temperature.

thermal factor A factor applied in doing lighting calculations that compensates for changes in the light given off by a fluorescent lamp when the ballast/lamp configuration varies from that used in photometric tests.

thermal insulating cement A dry mixture of cement and granular, flaky, fibrous, or powdery materials of low conductivity; when mixed with water and applied to a surface, it dries to provide an insulating covering.

thermal insulation

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thermal insulation (heat insulation)

A material that provides a high resistance to heat flow. Examples are foamed plastics, mineral or glass fibers, cork, and foamed glass. The material is used in the form of blankets, boards, blocks, and poured or granular fill.

thermal interference A naturally occurring process in which temperature differentials can interfere with the operation of injection wells.

thermal lag The time required to add or remove heat from a mass before it reaches the design set point temperature.

thermal limit switch

Automatically disconnects the electric supply if air flow through a heater is reduced below a safe level.

thermally protected A label appearing on the nameplate of a motor or motor-compressor that identifies it as being provided with a thermal protector. See also **thermal protector**.

thermal mass cooling A method suited to climates with wide diurnal temperature swings. It involves running cool nighttime air across a large indoor building mass, such as a slab. The cool thermal mass then absorbs heat during the day.

thermal movement Changes in dimension of masonry or concrete resulting from fluctuations of temperature over time.

thermal oxidation A process that heats a gas stream to a sufficiently high temperature with adequate residence time to oxidize the hydrocarbons to carbon dioxide and water.

thermal process (hot-and-cold-bath treatment) A type of wood preservation treatment whereby the wood is heated in the preservative for several hours and then submerged in cold preservative for several more hours. Creosote or penta are the preservatives most commonly used with this treatment method.

thermal protector A protective device consisting of one or more sensing elements and an external control device to guard against overheating that can result from overload or failure to start.

thermal radiation The transmission of heat through electromagnetic waves from a warm surface to a cooler one.

thermal regenerator A device within a heating duct that is used to recover excess heat and send it to other areas.

thermal resistance (R Value)

The resistance of a material to the transmission of heat.

thermal shock The subjection of a material or body, such as partially hardened concrete, to a rapid change in temperature that may be expected to have a potentially deleterious effect.

thermal storage capacity A material's capacity to store the sun's heat for later use.

thermal stress (temperature stress)

Stress induced in an object or structural member by restraint against movement required to accommodate temperature changes.

thermal transmittance (U-value)

The measure of the rate of heat flow per unit area under steady conditions from the fluid on the warm side of a barrier to the fluid on the cold side, per unit temperature difference between the fluids.

thermal unit A unit of heat energy, usually the British thermal unit (Btu) in the English system or the calorie in the metric system.

thermal valve A valve with an activating element that responds to temperature or rate of temperature change.

thermite welding A welding process that uses heated liquid metal and slag resulting from the ignition of a mixture of ferric oxide and aluminum particles.

thermocouple A device for measuring temperature that has two junctions

of two dissimilar metals. When the two junctions are at different temperatures, the junction connected to an instrument, such as a voltmeter, generates voltage.

thermoelectric Conversion of electricity to heat or heat to electricity.

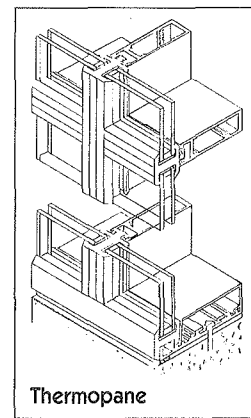
thermography Process used to photograph heat being emitted from a structure. The photographs are in color, and the rate of heat loss related to particular colors.

thermomechanical pulping (TMP)

A process in which wood chips are heated and softened by steam before being ground into fibers.

thermometer well A specially-designed enclosure connected into the piping system and into which a thermometer can be placed to measure the temperature of a fluid in the piping.

Thermopane Trade name of a double-glazed panel for doors or windows, used for thermal insulation.

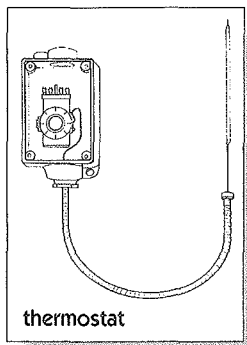


thermopiles A support system used in permafrost that relies on temperature differences and natural convection for removing heat from the ground to keep it frozen or refrozen.

thermoplastic Becoming soft when heated and hard when cooled.

thermosetting Becoming rigid by chemical reaction and not re-meltable.

thermostat An electric switch controlled by an element that responds to temperature; used in heating and/or cooling systems.



thermostatic expansion valve

A valve regulating the flow of volatile refrigerant to a cooling unit, activated by changes in cooling unit pressure and superheat of the refrigerant leaving the cooling unit.

thermostatic trap A steam trap using a thermally actuated element to expand and close a discharge port when a designed amount of steam flows through it, and to contract and allow condensate to flow through as the temperature drops; usually used on steam radiators.

thermosiphon system A solar-powered water heating system that requires no pump or electricity to run.

thick-lift asphalt pavement A paving process in which the asphalt course is placed in one or more lifts of 4" or more compacted thickness.

thickness gauge See *feeler gauge*.

thick panels Plywood panels 5/8" and thicker.

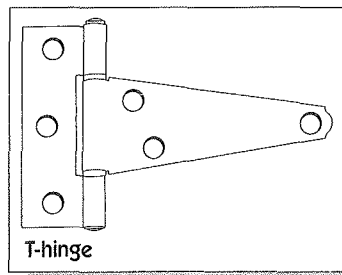
thimble 1. A protective sleeve in a part intended to hold an item supported by, or passing through, the part. 2. A protective sleeve of metal in the wall of a chimney used to hold the end of a stovepipe or smoke pipe.

thin butt A defect in western red cedar shakes in which the butt end of the

shake fails to meet minimum thickness requirements.

thin edge A defect in shakes in which the thickness of 24" shakes, within 10" of the butt, is less than half the minimum specified thickness.

T-hinge (tee-hinge) A T-shaped, surface-mounted hinge. The crossarm of the T is fixed to a door frame or post while the length of the T supports a door or gate.



thinner Any volatile liquid used to lower the viscosity of a paint, adhesive, or other like material.

thin-set Descriptive of bonding materials for tile that are applied in a layer approximately 1/8" (3mm) thick.

thin-shell concrete Reinforced or prestressed concrete used to form a large shell. The thickness of the concrete is small relative to the span of the shell.

thin-shell precast Precast concrete characterized by thin slabs and web sections. See also *shell construction*.

thin-wall conduit Electric conduit with a wall thickness that will not support threads. Sections are joined by couplings held in place by setscrews.

third clear (Factory Select, #3 clear) The highest grade of shop lumber. This grade will yield a high percentage of cuttings, but represents a small portion of a mill's total shop production.

third party claim A claim against either or both the owner or the contractor by

members of the public, or other parties, usually for property damage or personal injury.*

third-party commissioning

Independent assessment of systems to ensure that their installation and operation meets design specifications and that they are as efficient as possible. See also *commissioning*.

thixotropy The property of a material that enables it to stiffen quickly while standing, but acquire lower viscosity with mechanical agitation, such as certain gels. Material having this property is called thixotropic. See also *rheology*.

thoroughly air-dried (TAD)

Lumber that is air-dried sufficiently to meet the grading rule requirements for dry lumber.

thread A ridge, of uniform cross section, following a helix on the external or internal surface of a cylinder.

thread-cutting screw Screw that cuts threads in metal and joins metal sections.

threaded anchorage An anchoring device that is provided with threads to facilitate attaching the jacking device and to effect the anchorage.

threaded insert A device forced into a pre-drilled hole to form screw threads.

threaded joint A mechanical joint between threaded pipes.

threaded stud A fastening device with one pointed end driven into a material, such as concrete, and the other end is threaded and extends above the surface for the attachment of structural members.

threads, classes Loose tolerance threads are Class 1. Threads with Class 2 listing are usually stainless steel with normal commercial tolerances. Class 3 are made to stricter tolerances and fit much more tightly. When letter "A" is added to a class, it indicates external threads, or screws. Letter "B" means internal threads or nuts.

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threads, course

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threads, coarse Deep threads with fewer threads per inch that provide better protection against stripping and metal fatigue.

three-coat work The application of three coats of plaster: scratch coat, brown coat, and finish coat.

three-hinged arch An arch designed in two parts that are pin-connected, or hinged, to each other and to their supports. Such arches are designed for convenience of transportation and erection.

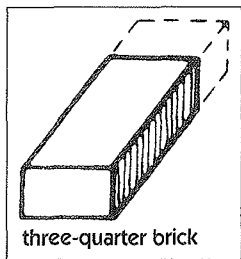
three-phase line A conductor installation that is able to carry heavy loads of electricity.

three-phase motor Induction motor in which the voltage varies from phase to phase by 120°.

three-point lock An assembly that latches the active leaf or a pair of doors at three points.

three-quarter bat See **three-quarter brick**.

three-quarter brick A brick that has a length equal to approximately three-quarters that of a normal brick.



three-quarter closer See **king closer**.

three-quarter header A header of approximately three-quarters the length of a normal brick.

three-quarter turn Descriptive of a stair that turns through 270° in its progress from top to bottom.

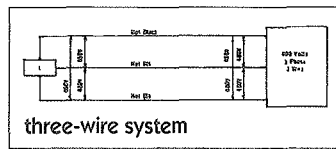
three-quarter view A view of an object that is midway between a front view and a side view.

three-way strap A metal strap used to tie three members of a wood truss together at a joint.

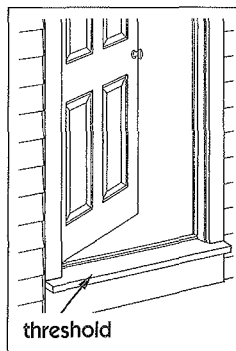
three-way switch An electric switch used to control lights from two different points, as from two different ends of a hallway.

three-way valve A valve with two outlets and one inlet or two inlets and one outlet.

three-wire system A system of electric power supply consisting of three conductors, one of which, the neutral wire, is maintained at a potential midway between the other two.



threshold **1.** A shaped strip on the floor between the jambs of a door; used to separate different types of flooring, or to provide weather protection at an exterior door. **2.** The level of lighting or volume of illumination that permits an object to be seen a specified percentage of the time with specified accuracy.



threshold limit value (TLV)

The concentration of a hazardous substance to which a person may be exposed continuously without adverse health effects.

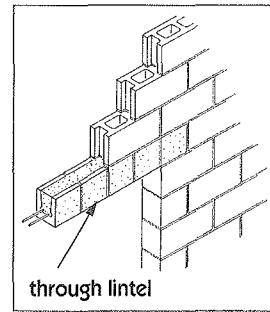
thriebeam Often used as bridge railing, it is steel plate (usually galvanized) with lengthwise raised areas or corrugations.

throat **1.** A groove cut in the underside of an exterior projecting piece, such as a sill or coping, to prevent water running back across the underside to a wall. See also **chimney throat**. **2.** The thinnest part supporting a stair stringer. **3.** The thinnest area of concrete stairs—between the intersection of the back of the tread and bottom of the riser and the underside of the soffit. **4.** The thinnest part of a weld. **5.** The opening in a wood plane hand tool where the shavings pass through.

through bolt A bolt that passes completely through the members it connects.

through bond The transverse bond formed by masonry units extending through a wall.

through lintel A lintel having thickness equal to that of the wall in which it is placed.



through lot A lot (with the exception of a corner lot) that has frontage on two public streets.

through-penetration An opening through a fire-resistive partition or floor/ceiling assembly to provide for an item (such as piping) to pass through it. Through-penetrations usually require the use of a firestop system to protect against the spread of fire through the opening.

through-penetration firestop A system for sealing through-penetrations in fire-resistant floors, walls and ceilings.

through shake A shake extending through the thickness of the timber.

through stone A bond stone that extends through the full thickness of a wall.

through tenon A tenon extending completely through the part in which the mortise is cut.

through-wall flashing A flashing that extends completely through a wall, as at a parapet.

throw **1.** The distance a latch bolt extends. **2.** The horizontal or vertical distance an airstream travels after leaving an outlet until its velocity is reduced to a specific value. **3.** The effective distance between a fixture and the area being illuminated. **4.** The scattering of fragments from a blast. **5.** The longest straight distance traveled in a complete stroke of a rotary part.

throwout bearing A bearing that rides on the clutch jackshaft, that carries the engage-and-disengage mechanism.

thrust **1.** The amount of force or push exerted by or on a structure. Sometimes the horizontal component of that force. **2.** In an arch, the resultant force normal to any cross section of the arch.

thrust bearing A support for a shaft that is designed to resist its end thrust.

thrust block Additional support introduced at the point of intersection between a brace and its support.

thrust washer A washer that holds a rotating part in place and keeps it from moving sideways relative to its bearings.

thumb knob See turn knob.

thumb latch See latch.

thumb nail bead Refers to quarter round molding commonly found on the inside edge of rails and stiles on glazed or raised panel doors.

thumb nut See wing nut.

thumb piece A small pivoted part above a door handle. Pressure on this part by a thumb operates the latch.

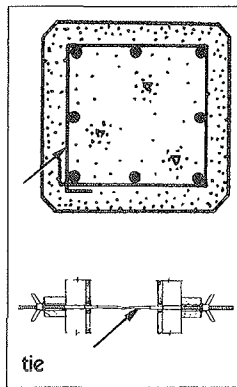
thumbscrew A screw that has a head that is either curled or flattened so it can be turned with a thumb and fingers.

thumbturn A small lever attached to a bolt lock that operates the lock much like a key by turning it.

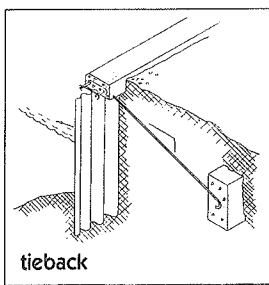
tideland spruce Sitka spruce.

tidewater red cypress Bald cypress.

tie **1.** A member or device that keeps two separate parts together, i.e., tie beam. **2.** Loop of reinforcing bars encircling the longitudinal steel in columns. **3.** A tensile unit adapted to holding concrete forms secure against the lateral pressure of unhardened concrete, with or without provision for spacing the forms a definite distance apart, and with or without provision for removal of metal to a specified distance from the finished concrete surface.



tieback A rod fastened to a deadman, a rigid foundation, or a rock or soil anchor to prevent lateral movement of formwork, sheet pile walls, retaining walls, or bulkheads.



tie bar **1.** Bar at right angles to, and tied to, minimum reinforcement to keep it in place. **2.** Bar extending across a construction joint.

tie beam **1.** A concrete beam that connects individual pile caps or spread footings. **2.** A horizontal timber that connects the lower end of two opposite rafters to prevent spreading.

tied column A column, laterally reinforced with ties.

tie iron See wall tie.

tie plate A plate used to join two components or parallel parts of a built-up structural-steel member.

tier See lift.

Tier I or Tier II Form required under SARA Title III for reporting inventory of hazardous substances.

tie rod See form tie and tieback.

tie wall A wall built perpendicular to a spandrel wall for lateral stability.

tie wire **1.** A wire used to hold forms together so they will not spread when filled with concrete. **2.** A single-strand wire used to tie reinforcing in place or metal lath to a column.

tige The shaft of a column, from the base moldings to the capital.

tigerwood A dark colored wood of western Africa used for some interior carpentry applications.

tight An estimate that does not allow for contingencies and that has no slack.

tight buildings Buildings that are designed to minimize infiltration air in order to reduce heating and cooling costs.

tight knot A knot in a piece of lumber that is sound and poses no detriment to the proper use of the wood member.

tight sheathing **1.** Tongue-and-groove or matched boards nailed to rafters or studs that may run at an angle to provide stiffness to the roof or wall. **2.** Excavation sheathing with the vertical planks interlocked for use in saturated soils. See also closed sheeting.

tile

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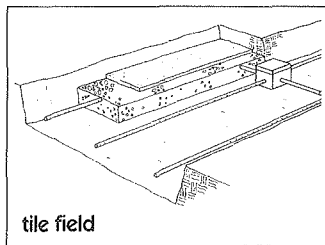
tile A thin rectangular unit used as a finish for walls, floors or roofs, such as ceramic tile, structural clay tile, asphalt tile, cork tile, resilient tile, and roofing tile.

tile-and-a-half tile A roof tile that is the same length as the other tiles on a roof, but 1-1/2 times as wide.

tileboard **1.** A wallboard with a factory-applied facing that is hard, glossy, and decorated to simulate tile. **2.** A square or rectangular board of compressed wood or vegetable fibers, used for ceiling or wall facings.

tile creasing A water-shedding barrier at the top of a brick wall consisting of two courses of tile that project beyond both faces of the wall.

tile field A system of distribution tile normally associated with a septic tank and leaching field system.



tile field

tile hammer A small brick hammer used to strike glazed tiles and bricks, and sometimes face brick.

tile pick A pointed hammer used to create holes in tile.

tile pin A pin that is passed through a roofing tile into the subfloor underneath to hold tile in place.

tile tie A section of heavy wire used to help secure roof tile.

till (glacial till, boulder clay) An unstratified glacial deposit consisting of compacted pockets of clay, silt, sand, gravel, and boulders, usually having good bearing capacity.

tilt controls Devices that change the angle of a heat pipe tube to allow

gravity to vary the velocity of the liquid refrigerant flowing down the tube.

tilting concrete mixer See **tilting mixer**.

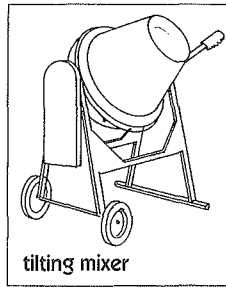
tilting drum mixer See **tilting mixer**.

tilting fillet (cant strip, doubling piece)

A thin wedge placed under the eave course of shingles or tiles to shed water more effectively.

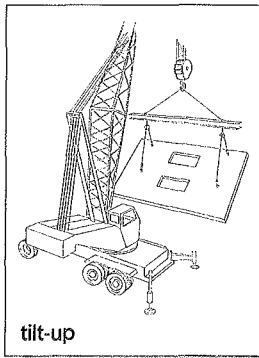
tilting level A surveyor's level with a bubble mounted on the telescope and a provision for slight tilting of the telescope and level. The upright axis of the unit does not need to be vertical, but the level and telescope must be precisely aligned.

tilting mixer A small mixer for concrete or mortar that is emptied by tilting the mixer about a horizontal pivot.



tilting mixer

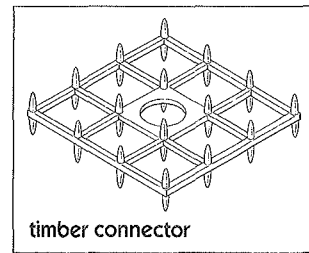
tilt-up (tilt-up construction) A method of concrete construction in which members are cast horizontally at a location adjacent to their eventual position and tilted into place after removal of forms.



tilt-up

timber **1.** Uncut trees or logs suitable for cutting into lumber. **2.** Wood sawn into balks and planks, suitable for use in carpentry or construction. **3.** Square-sawn lumber having a minimum nominal dimension of 5" in U.S., or approximately equal cross dimension greater than 4" x 4-1/2" or 10 cm x 11 cm in Britain. **4.** Any heavy wood beam used for shoring or bracing.

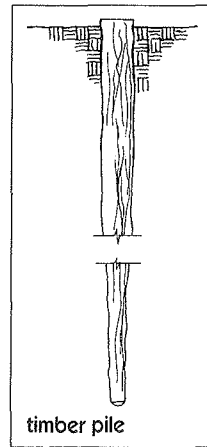
timber connector One of a variety of metal connectors used in conjunction with bolts to form connections of timbers. Usually the bolt holds the timbers together while the connector prevents slippage.



timber connector

timber-framed building A building that has timbers for above-ground structural elements (except foundations).

timber pile A large, debarked, pressure-treated straight log that is driven into the ground as foundation support.



timber pile

time Term used in construction contracts to refer to limits or periods by or during which certain activities will take place. The statement, "time is of the essence of the contract" is used to indicate that the parties consider timely performance an essential element in the performance of the work.

time-based program A program that starts and stops equipment as a function of preprogrammed time.

time-delay fuse A fuse in an electric circuit that takes more than twelve seconds to open at 200% load.

time-dependent deformation Combined effects of autogenous volume change, contraction, creep, expansion, shrinkage, and swelling occurring during an appreciable period of time, not synonymous with inelastic behavior or volume change.

time division multiplexing Splitting a channel into a series of time slots and allotting them for certain sources so that messages from a number of devices are received at sufficiently spaced intervals.

time is of the essence **1.** A phrase used in a contract that requires all references to specific dates noted be interpreted exactly. **2.** Also refers to timely performance of the contract to avoid a breach of contract.

timekeeper A representative of the contractor who keeps records of hours worked by employees of the contractor and allocates the hours to various parts of the work.

time line Schedule line showing key dates and planned events.*

timely completion Completion of the specified work, or an agreed upon portion of the work, within the required time limits.

time of completion A specific date stated in the construction contract for substantial completion of the work. *See also date of substantial completion.*

time of haul In production of ready-mixed concrete, the period from first contact between mixing water and cement until completion of discharge of the freshly mixed concrete.

time of set *See initial setting time and final setting time.*

time of setting *See initial setting time and final setting time.*

time sensitive costs Costs defined by the duration for which they are needed. The longer the particular item (such as a dumpster) is on the job site, the higher the cost.

timesharing A sequential method of computer operation in which a number of computer operators at remote locations simultaneously use a single multiple-access computer.

time system A system of clocks and control devices, with or without a master timepiece, that will display current time at various locations and may include devices to program other systems, such as bells.

time-temperature curve Rate at which the temperature increases in a fire-testing furnace. Developed by ASTM, NFPA and UL, this curve is adhered to in all fire-resistive testing.

time value of money **1.** The time-dependent value of money stemming both from changes in the purchasing power of money (that is, inflation or deflation), and from the real earning potential of alternative investments over time. **2.** The cumulative effect of elapsed time on the money value of an event, based on the earning power of equivalent invested funds. **3.** The expected interest rate that capital should or will earn.*

time weighted average (TWA) The average exposure of a person during eight hours to an airborne chemical hazard.

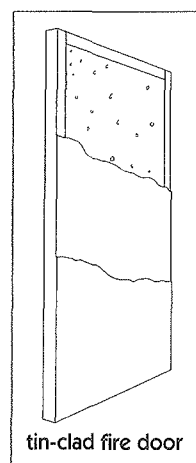
tin **1.** A lustrous, white, malleable metal with a low melting point, highly

resistant to corrosion; used to make alloys and solder, and to coat sheet metal. When it is added to brass alloys, it provides greater strength and hardness, and also provides corrosion resistance from salt water. **2.** To coat with a thin layer of tin or other protective metal. **3.** Trade slang for aluminum siding.

tin-canning *See oil canning.*

tin-cap A small, flat metal washer used under roofing nails.

tin-clad fire door A door of two or three plywood planks, core covered with metal sheets and constructed in accordance with specifications of labeling authorities.



tingle A flexible metal clip designed to hold a sheet of metal or glass.

tinker's dam Small dam of sand or other non-combustible material that contains the spread of molten solder.

tin knocker (tin bender) A sheet metal worker.

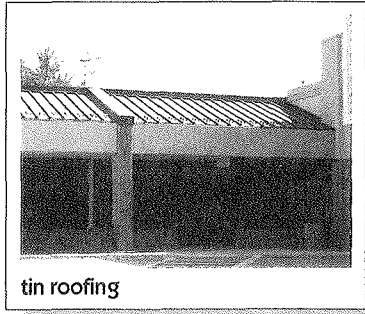
tinning Coating metal with a tin alloy for corrosion protection or as a presoldering procedure.

tinplate Sheet steel or iron that has been coated with tin as protection against corrosion.

tin roofing

T

tin roofing A roof covering of tinplate or terneplate.



tin roofing

tin saw A saw used for cutting brick kerfs.

tin snips Strong shears with a blunt nose, used to cut sheet metal.

tint A light color made by diluting a color with white.

tip up A downspout extension that directs water away from the building.

T-iron See tee iron.

titanium A light-weight, silver-grey metal that is strong and quite expensive. It is often added to other metals. Its properties include corrosion resistance against chlorides, acids and salt water.

title **1.** The right of ownership in real property. **2.** Legal documents that indicate right of ownership of real property.

Title VII of the Civil Rights Act of 1964 A federal law that prohibits employers from discriminating against employees. Under Title VII, discrimination is defined as treating employees differently with respect to compensation, promotion, job conditions, hiring, or discharge on the basis of race, color, religion, sex, or national origin.

title insurance Insurance policy that a title to property is clear or that it can be cleared by resolving certain defects.

title search A search into the historical ownership record of a property to establish its true ownership and check

the existence of liens or easements that might affect the sale of the property.

title sheet The first page of a set of blueprints that usually includes location, name, a plot or sketch of the project, designer's name, and a list of the prints.

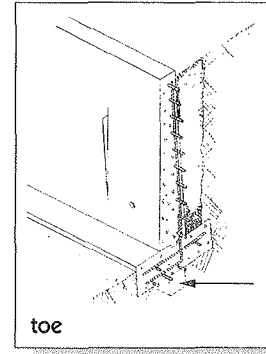
T-joint See tee joint.

tobacco juicing Term given to the brown residue that comes out of asphalt products during weathering. Typically, it is seen on asphalt roofing shingles after periods of sun and rain in the first year exposed to the weather. It often disappears after that time.

tobermorite **1.** A mineral found in northern Ireland and elsewhere, having the formula $5\text{CaO} \cdot 6\text{SiO}_2 \cdot 5\text{H}_2\text{O}$. **2.** $\text{Ca}_4\text{H}_4\text{O}$, the artificial product tobermorite, G, of Brunauer, a hydrated calcium silicate having CaO/SiO_2 ratio in the range 1.39 to 1.75. It forms minute layered crystals that constitute the principal cementing medium in Portland cement concrete, a mineral with 5 mols of lime to 6 mols of silica, usually occurring in plate-like crystals that are easily synthesized at steam pressures of about 100 psi and higher. Tobermorite is the binder in several properly autoclaved products.

tobermorite gel The binder of concrete cured moist or in atmospheric-pressure steam. A lime-rich gel-like solid containing 1.5 to 2.0 mols of lime per mol of silica.

toe **1.** Any projection from the base of a construction or object to give it increased bearing and stability. **2.** That part of the base of a retaining wall that projects beyond the face away from the retained material. **3.** The lower portion of the lock stile. **4.** The junction between the base metal and the face of a filled weld. **5.** To drive a nail at an oblique angle. **6.** That portion of sheeting below the excavated material. **7.** The part of a blasting hole furthest from the face.



toeboard A vertical barrier at floor level erected along exposed edges of a floor opening, wall opening, platform, runway, or ramp to prevent falls of materials.

toed Descriptive of a board or strut that has its ends secured by nailing at an oblique angle.

toehold A batten or board temporarily nailed to a sloping roof as a footing for workers.

toe in The decreased size in the outside diameter of a plaster pipe at the end where it is cut.

toe joint A joint between a horizontal timber and another angle from the horizontal, as between a rafter and a plate.

toenail **1.** To drive a nail at an angle. **2.** A nail driven diagonally from a stud into another framing member.

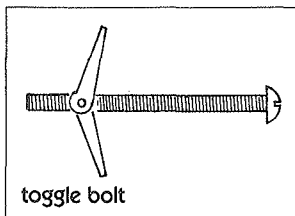
toenailing Fastening a piece of lumber by driving nails obliquely to the surface. Alternate nails may be opposing to increase holding power.

toeplate A metal bar fastened to an outer edge of grating or the rear of a tread, and projecting above the surface to form a lip. See also kickplate.

toe wall A low wall built at the bottom of an embankment for greater stability.

toggle bolt A bolt and nut assembly used to fasten objects to a hollow wall or a wall accessible from only one side. The nut has pivoted wings that close

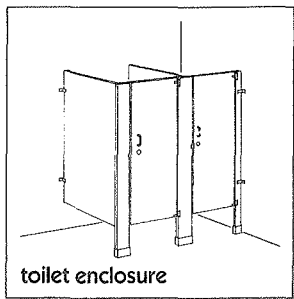
against a spring when the nut end of the assembly is pushed through a hole and is open on the other side.



toggle switch A lever-actuated snap switch.

toilet The room housing one or more water closets.

toilet enclosure A compartment placed around a water closet for privacy.



toilet partition One of the panels forming a toilet enclosure.

tolerance **1.** The permitted variation from a given dimension or quantity. **2.** The range of variation permitted in maintaining a specified dimension. **3.** A permitted variation from location or alignment.

tom See shore.

ton **1.** A measure of weight equal to 2,000 lbs. or 907.2 kg. **2.** In cooling systems, a measurement of chiller size equal to 12,000 Btus of heat removal per hour.

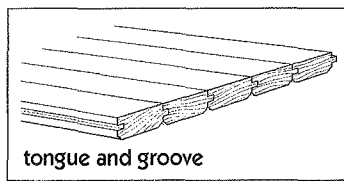
Tonawanda pine *Pinus strobus*. See eastern S-P-F.

tone The quality of color; a tint or shade.

tongue One edge of a piece of lumber that has been rabbeted from opposite faces,

leaving a projection intended to fit into a groove cut into another board.

tongue and groove **1.** Lumber machined to have a groove on one side and a protruding tongue on the other, so that pieces will fit snugly together, with the tongue of one fitting into the groove of the other. **2.** A type of lumber or precast concrete pile having mated projecting and grooved edges to provide a tight fit, abbreviated "T&G."



tongue-and-groove joint (T&G joint)

A joint made by fitting a structural, cast-in-place surface for metal. The joint may also be welded. For plastic or wood pieces, the joint may be glued.

tongue-and-groove material See dressed and matched boards.

tongue-and-groove pliers Self-locking, adjustable pliers with serrated teeth.

tongue-and-lip joint (tongue joint)

A type of tongue-and-groove joint, except the tongue is wedge-shaped and the groove is tapered to receive it.

tongued miter A miter joint incorporating a tongue.

ton of refrigeration A measure of refrigerating effect equal to 12,000 Btu per hour.

tooled ashlar Ashlar masonry with a tooled finish.

tooled finish (tooled surface) A stone finish with the surface having 2 to 12 concave grooves per inch, or 5 to 30 grooves per centimeter.

tooled joint A masonry joint in which the mortar has been shaped or worked before it sets.

tooling **1.** Shaping and compacting a mortar joint. **2.** The work involved in making a tooled finish.

tooling time The period of time after applying sealant in a joint during which it is possible to tool.

tool pad A tool consisting of a handle and a chuck for holding small tool bits, such as awls or screwdriver blades. The handle may be hollow for storage of a collection of bits.

tooth A fine texture in a paint film provided by pigments or by abrasives used in sanding, providing a base for adhesion of a second coat.

toothed plate (bulldog plate, toothed gusset) A punched metal plate in which the punched metal protrudes from one side, forming teeth. Toothed plates are used for timber connections.

toothed ring A toothed ring that serves as a timber connector, generally used in the manufacture of large member wood trusses. See also toothed plate.

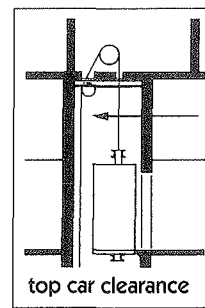
toothing Cutting or chipping out courses in old work as a bond for new work.

toothing plane A plane with a serrated blade mounted nearly vertically, used to roughen a surface prior to application of a veneer.

top-and-bottom cap One of the metal channels attached, on the job site, to the top or bottom of a hollow metal door that is not so finished at the factory.

top beam A collar beam.

top car clearance The clearance between the top of an elevator car, or crosshead if provided, and the lowest overhead obstruction when the car is level with the top terminal landing.



top chord

T

top chord The upper section of a truss.

top coat The final coat in a paint system.

top cut The vertical cut at the top of a rafter.

top dressing A thin layer of manure, humus, or loam applied to improve soil conditions in planted areas.

top form Form required on the upper or outer surface of a sloping slab or thin shell.

top hung-in window An awning window that pivots at the top, and the bottom swings in.

topiary Trees pruned or trimmed in a geometric pattern, or sculptural shapes resembling flowers or animals.

top lap The shortest distance between the lower edge of an overlapping roof shingle and the uppermost edge of the one in the course directly below.

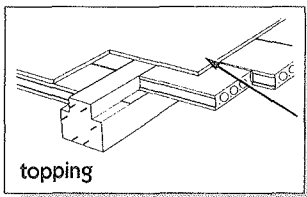
toplighting Lighting from above.

topographic survey A review process and record of information regarding the surface conditions of a proposed construction site. The resulting drawing normally uses contour lines to convey the surface height or depth relative to a given level.

topology In telecommunications, the physical layout of the network.

top out To install the highest structural member or complete the highest course in a construction.

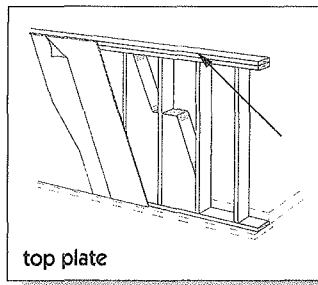
topping **1.** A layer of concrete or mortar placed to form a floor surface on a concrete base. **2.** A structural, cast-in-place surface for precast floor and roof systems. **3.** The mixture of marble chips and matrix that, when properly processed, produces a terrazzo surface.



topping compound A compound specifically formulated and manufactured for use over taping or all-purpose compounds to provide a smooth, level surface for applying decoration.

topping joint A joint in a topping layer that is directly over a joint in the base material.

top plate A member on top of a stud wall on which joists rest to support an additional floor or to form a ceiling.



topsoil The surface layer of soil, usually containing organic matter, a mixture of particle sizes, and some animal life. See also **loam**.

torch brazing A brazing process in which the heat is supplied by a torch.

torchere A floor lamp that directs almost all, if not all, of its light upwards.

torching The application of a lime mortar under the up-slope edges of roof tiles or slates. In full torching, the exposed underside of slates between battens is mortared.

torch soldering Soldering, with a gas flame supplying the required heat.

torn grain Part of the wood torn out in surfacing. Torn grain is classified for grading purposes as slight, medium, heavy, or deep.

torpedo level Hand level, which may have a laser, that is used to level and plumb short members.

torque **1.** The force used to rotate something. **2.** Turning or twisting energy measured as the product of a

force and a lever arm. **3.** That which tends to produce rotation.

torque converter A hydraulic coupling that introduces slippage to increase torque.

torque viscometer An apparatus used for measuring the consistency of slurries in which the energy required to rotate a device suspended in a rotating cup is proportional to viscosity.

torque wrench A tool used to turn nuts, bolts, and other similarly threaded fasteners. Unlike other types of wrenches, torque wrenches have a built-in device that measures the amount of torque (the turning or twisting force) applied to a nut or bolt. The device may be an audible signal, a scale built into the handle, or a dial, calibrated scale, or light. Torque wrenches limit the maximum amount of force that can be used, thereby preventing damage to the fastener and the material to which it is fastened.

torsel A piece of timber, steel, or stone placed under one end of a beam or joist to distribute its load.

torsion The twisting of a structural member by two equal and opposite torques.

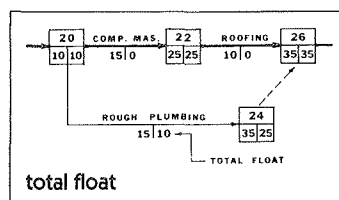
torsion strength The measure of resistance of a material to twisting about an axis. For example, the amount of force needed to twist a fastener apart.

torus roll A joint in sheet metal or lead roofing at the intersection of two surfaces with different slopes. The joint is formed to allow for differential movement.

total cost bidding A method of establishing the purchase price of movable equipment. The buyer is guaranteed that maintenance will not exceed a set maximum amount during a fixed period and that the equipment will be repurchased at a set minimum price when the period ends.*

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total float In CPM terminology, the difference between the time available to accomplish an activity and the estimated time required.



total harmonic distortion (THD)

A measure of the distortion of sinusoidal waves by harmonics. Fluorescent fixtures reflect harmonics back into the electrical supply system.

total heat The sum of both latent and sensible heat.

total pressure (impact pressure) The sum of velocity pressure and static pressure in a moving liquid. Measurement is expressed in inches of water.

total rise of a roof The vertical distance between the plate and the ridge of a roof.

total run The distance covered by a rafter including any overhang.

total suspended solids (TTS) A measure of the solid or particulate content of a liquid.

touch sanding A light surface sanding.

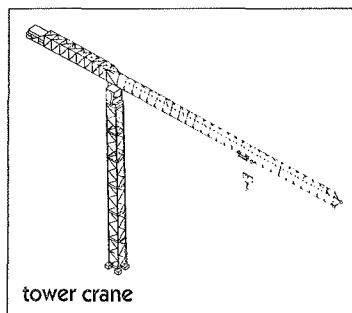
tough ash (European white ash)

Fraxinus excelsior. A type of wood widely used in bentwood products.

toughness The property of matter that resists fracture by impact or shock.

tower A composite structure of frames, braces, and accessories.

tower crane A crane with a fixed vertical mast that is topped by a rotating boom and equipped with a winch for hoisting and lowering loads. The winch can be moved along the boom so that any location within the diameter of the boom can be reached.



tower equalizing lines Pipes installed to directly connect adjacent cooling tower basins to maintain a common basin water level.

townhouse As defined for the purpose of building codes, single-family housing built in a group of three or more attached units.

town planning See city planning.

townscape The relationship of exterior structures in a town that determines its distinctive character.

toxic Causing an adverse health effect.

toxic agent A substance that causes an adverse health effect in humans.

TPH test A test used to determine the total quantity of petroleum hydrocarbons in a sample of soil or water.

T-plate A flat metal plate in the shape of a T, used to join or strengthen a right angle joint made between two timbers.

trabeated system A system of building construction using beams or lintels supported by columns.

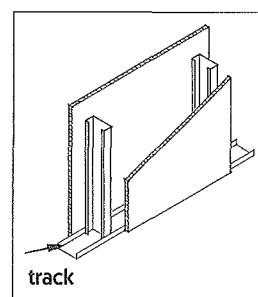
trabeation (entablature) A type of construction utilizing horizontal members supported by columns. Trabeation is a common method of construction in Japan.

tracing cloth A smooth linen fabric impregnated and coated with sizing to make it transparent, used for tracing.

track 1. A light gauge U-shaped metal member attached to a floor and used to

anchor studs for a partition.

2. A U-shaped member attached to a floor, ceiling, door or window header; used as a guide for a sliding or folding partition, door, or curtain. 3. A pair of special structural shapes with fastenings or ties for a craneway, movable wall, or railroad. 4. An electrical raceway that allows the placement and use of a variety of types of luminaires along it.

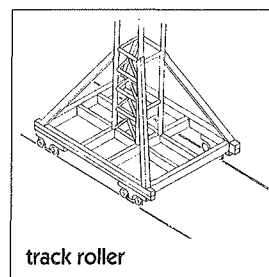


tracking solar collection systems

Solar collection systems that are typically pole-mounted to the ground and that track the east-west movement of the sun for maximum energy collection.

track lighting A series of movable lights arranged in a line and located on a strip on the ceiling or mounted flush. Typically used for accent or spot lighting.

track roller In a crawler machine, the small wheels that are under the track frame and that rest on the track.



traction The friction developed between a body and a surface on which it moves relative to the total amount of driving force exerted.

traction elevator

T

traction elevator A car and counterweight attached to opposite ends of a hoist rope, which is moved by a traction machine. Used in buildings with more than five floors. (Courtesy of National Elevator Industry, Inc.)

traction machine An electric machine in which the friction between the hoist ropes and the machine sheave is used to move the elevator car. (Courtesy of National Elevator Industry, Inc.)

traction steel Steel with strength of 180,000 to 190,000 pounds per square inch that is used to manufacture wire rope.

tractor A vehicle on tracks or wheels used for towing or operating equipment.

trade (craft) **1.** The business or work in which one engages regularly and which may require manual skill. **2.** A group representing a particular occupation or craft.

trade discount A dealer discount offered to the contractor by the supplier representing the difference between list price and the actual charge for goods or services.

trade price list The published price sheet issued to contractors by manufacturers.

trade secrets Chemical formulae or manufacturing processes that enable a particular business entity to gain a competitive edge in the marketplace, the disclosure of which would cause the business to lose that advantage.

trade stacking Having more subcontractor or prime contractor work crews performing different types of construction work in the same area than is efficient for the flow of the work.

traffic **1.** The total number of messages handled by a communications channel in a given period, expressed in hundred call seconds (CCS) or other units. **2.** Number of vehicles within a specific space and time.

traffic cone A pliable and highly visible cone used as a temporary marker to direct traffic away from a work area.

traffic paint Paint formulated to withstand vehicular traffic, and to be highly visible at night; used to mark traffic lanes and pedestrian crossings.

trailer on flat car (TOFC) A truck trailer carried on a flat car, piggyback.

train A string of connected or unconnected vehicles or mobile equipment, such as a paving train, which consists of mobile machines to lay the various courses of a pavement.

trajectory of prestressing force The path along that the prestress is effective in a structure or member. It is coincident with the center of gravity of the tendons for simple flexural members and statically indeterminate members that are prestressed with concordant tendons; but, it is not coincident with the center of gravity of the tendons of a statically indeterminate structure that is prestressed with nonconcordant tendons.

transducer A substance or device that converts input energy into output energy of a different form, such as a photoelectric cell.

transfer The act of transferring the stress in prestressing tendons from the jacks or pretensioning bed to the concrete member.

transfer bond In pretensioning, the bond stress resulting from the transfer of stress from the tendon to the concrete.

transfer case A transmission or gear set in an all-wheel drive vehicle that provides drive to the front shaft.

transfer column A column in a multistory framed building that is not continuous to the building foundation. At some floors the column is supported by a girder or girders, and its load transferred to adjacent columns.

transfer girder A girder that supports a transfer column.

transfer grille A grille or pair of grilles that allow air to move from one space to another, installed in locations such as a wall or door.

transfer length See **transmission length**.

transfer medium The material that carries heat from a solar collector to a living area or storage medium.

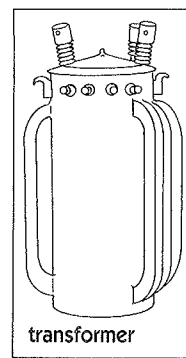
transfer molding An injection molding using a thermosetting material.

transfer strength In prestressed concrete, the concrete strength required before stress is transferred from the stressing mechanism to the concrete.

transfer switch A mechanism designed to switch an electrical conductor from one circuit to another without interrupting the current flow.

transformed section A hypothetical section of one material arranged so as to have the same elastic properties as a section of two materials.

transformer An electric device with two or more coupled windings, with and without a magnetic core, for introducing mutual coupling between circuits; generally used to convert a power supply at one voltage to another voltage.

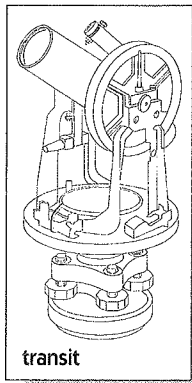


transformer bank Two or more transformers that are situated in the same enclosure, such as in a transformer vault.

transient adaptation The expansion and contraction of the pupil of the eye as light levels change.

transistor A semiconductor device with three terminals that amplifies electrical power.

transit A surveyor's instrument used to measure or lay out horizontal or vertical angles, or measure distance or difference in elevation.



transit

transit-and-stadia survey A type of survey in which angles are measured with a transit and distances are measured with a transit and a stadia rod.

Transite® A well-known brand name of high-strength cement made from Portland cement and non-asbestos fibers. It is sold in panels and as pre-formed items and pipe. Formerly made of asbestos-reinforced cement.

transition strip A strip of wood, metal, or vinyl that covers adjacent areas of flooring to ensure a smooth transition.

transit line Any line of a survey traverse projected by use of a transit or similar instrument.

transit mix (transit-mixed concrete) Concrete that is wholly or mainly mixed in a truck mixer, usually while in transit to the job site.

transit-mix truck See truck mixer.

translucent Descriptive of a material that transmits light, but diffuses it

sufficiently that an object cannot be seen clearly through the material.

transmission **1.** A gear set or similar device that permits changes in the speed/power ratio and/or direction of rotation. **2.** The process by which incident light leaves an object or surface from a side other than that which receives the light. **3.** The transportation of bulk electricity from the generator to the substation.

transmission length (transfer length)

The distance at the end of a pretensioned tendon necessary for the bond stress to develop the maximum tendon stress.

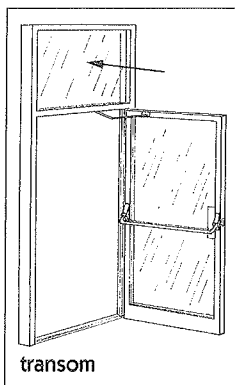
transmission line Any electric line operating at 69,000 or more volts.

transmission loss (TL) The decrease in energy during transmission from one surface of a medium to another, such as, through a panel or wall.

transmittal A form or letter conveying the action to be taken on an item being transmitted from one party to another.

transmittance The capacity of glass to transmit solar energy—in visible light, as well as ultraviolet and infrared ranges. Transmittance is measured in percentages of each type of light.

transom A glazed or solid panel over a door or window, usually hinged and used for ventilation. The transom and bar may be removable for passage of large objects.



transom

transom bar **1.** A horizontal member separating a transom from the door or window. **2.** Any intermediate horizontal member of the frame of a door or window.

transom bracket A bracket that supports an all-glass transom over an all-glass door.

transom catch A lock, used on a transom, with the latch bolt operated by a ring-shaped part. It may be opened using a pole with a hook on its end.

transom chain A short chain attached to a transom window to limit the opening, or hold open bottom-hinged windows.

transom lift A linkage system attached to a door frame and used to open a transom.

transom light A glazed light above the transom bar of a door.

transpired solar collector A low-cost, high-performing solar collector made of a painted metal plate perforated with small holes. Outdoor air for ventilation is heated as it is drawn in through the perforated collector.

transponder A radio or radar device that responds to a certain received signal by emitting a radio signal itself.

transverse cracks Cracks that develop at right angles to the long direction of the member.

transverse joint A joint parallel to the intermediate dimension of a structure.

transverse load A load applied at right angles to the longitudinal axis of a structural member, such as a wind load.

transverse prestress Prestress that is applied at right angles to the principal axis of a member.

transverse reinforcement

Reinforcement at right angles to the principal axis of a member.

transverse rib A rib in vaulting that spans the nave, cross aisle, or aisle, at right angles to the longitudinal axis of the area spanned.

transverse section

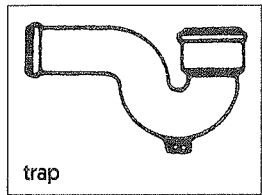
T

transverse section A section of a building taken at right angles to its longest dimension.

transverse shear A shearing action or force perpendicular to the main axis of a member.

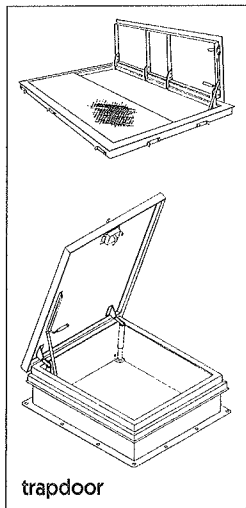
transverse strength See *flexural strength and modulus of rupture*.

trap **1.** A plumbing fixture so constructed that, when installed in a system, a water seal will form and prevent backflow of air or gas, but permit free flow of liquids. **2.** A removable section of stage floor. See also *traprock*.



trap coil A coil used in the electromagnet that activates a trip.

trapdoor A door set in a floor, ceiling, or roof.



trapeze hanger A horizontal rigid member used to suspend pips from two rods in instances where longitudinal movement is anticipated.

traprock (trap) Any of various fine-grained, dense, dark-colored igneous rocks, typically basalt or diabase.

trap seal (deep seal) The head (vertical distance between the crown weir and the dip of a trap fixture), expressed linearly resisting back pressure. The height of the water in a toilet bowl, it prevents sewer gases from entering the building.

trapway (passageway) The channel in a toilet that connects the bowl to the waste outlet. The trapway is where siphonic action occurs, and its size is measured in terms of the largest ball that can pass through it.

trash chute **1.** A smooth, open shaft in a multistory building, used to convey trash from upper floors to a collection room. **2.** A temporary chute used for trash removal during the construction of a multistory building.

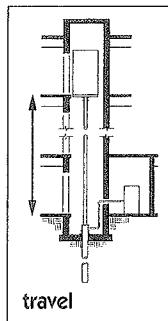
trash rack A grid of metal bars placed in front of a water inlet to collect larger solids transported by the water.

trass A natural pozzolan of volcanic origin found in Germany.

T-rated switch A switch rated in accordance with the national electric code for use in circuits containing tungsten filament lamps.

trave **1.** A beam or timber crossing a building. **2.** A panel in a ceiling delineated by beams or timbers.

travel (rise) The vertical distance between the bottom landing of an elevator or escalator and the top landing.



traveler An inverted, U-shaped structure usually mounted on tracks that permit it to move from one location to another to facilitate the construction of an arch, bridge, or building.

travelers Electrical wires between three-way and/or four-way switches.

traveling cable A cable made of electric conductors, that connects an elevator or dumbwaiter car with a fixed electric outlet in the hoistway.

traveling crane A tower crane mounted on tires, crawlers, or rails.

traveling form See *slip form*.

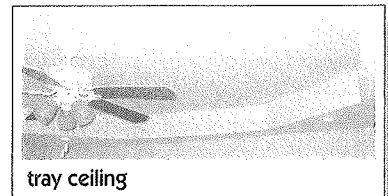
travel time Wages paid to workers under certain union contracts and/or certain job conditions for time spent traveling to work sites.

traverse **1.** To plane across the grain of wood. **2.** A structural crosspiece, such as a transom bar. **3.** A gallery or loft crossing a building. **4.** A barrier to allow passage by an official or dignitary, but discouraging unauthorized passage. See also *survey traverse*.

traverse closure The calculated line that closes a traverse; the resultant error of measurements, sometimes referred to as "linear error of closure."

travertine A variety of limestone deposited by running water, usually stratified; used for interior walls and for floors.

tray ceiling A horizontal ceiling constructed part way up the slope of a gabled roof.



tread **1.** The horizontal part of a stair. Historically, treads have been made from 5/4" x 12" vertical-grain lumber

called stepping. In recent years, however, most stepping has been made from particle board that is given a bullnosed edge. **2.** High-friction coating on a pulley for the purpose of reducing slippage of the belt.

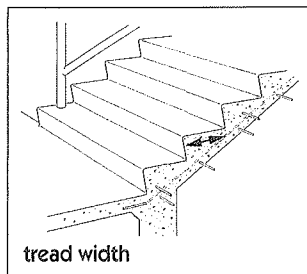
tread length The length of a tread measured perpendicular to the travel line of the stair.

tread plate A fabricated metal tread with a slip-resistant surface.

tread return The projection of a tread beyond the stringer of an open stair.

tread run The horizontal distance between nosings of stair treads.

tread width The horizontal distance from the nosing of a stair tread to the riser above the tread. The tread run plus nosing.



treated Wood products infused or coated with any of a variety of stains or chemicals designed to retard fire, decay, insect damage, or deterioration due to weather.

treated wood Wood that has been treated with a wood preservative. *See also fire-retardant wood.*

treatment train A collection of independent remedial technologies that meet the requirements of particular contaminants affecting the site.

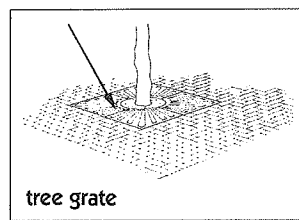
treble damages (punitive damages)

An award of three times the actual loss to the plaintiff as a means of punishing a defendant for a serious wrongful action or bad faith conduct.

tree belt A strip of soil between a sidewalk and a street, planted with grass, and sometimes, trees.

tree-dozer An attachment for a tractor or bulldozer consisting of metal bars and a cutting blade, used to clear bushes and small trees.

tree grate A metal grating set around a tree and flush with a pavement.



treenail A hardwood pin formerly used as a wood fastener.

trellis A latticework of wood or metal, usually used to support vines.

tremie A pipe or tube through which concrete is deposited under water, having at its upper end a hopper for filling and a bail for moving the assemblage.

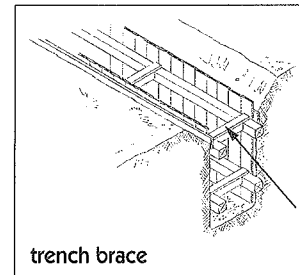
tremie concrete Subaqueous concrete placed by means of a tremie.

tremie seal The depth to which the discharge end of the pipe is kept embedded in the fresh concrete that is being placed. The seal is a layer of concrete placed in a cofferdam for the purpose of preventing the intrusion of water when the cofferdam is dewatered.

trenail *See treenail.*

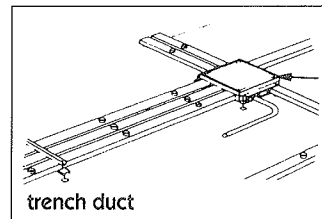
trench box (trench shield) Box-shaped sheathing made of wood or steel, permanently braced across a trench for excavation and pipe laying. The trench-box unit is pulled along the trench as excavation and pipe laying proceed. It prevents sidewall cave-in during trenching.

trench brace A normally adjustable device, used as crossbracing to support sheeting in a trench.



trench drain A cast-in-place or preformed concrete trench usually covered with a grate that serves as both a drain and a collection point for run-off water or other liquid.

trench duct A trough with removable covers through which electric power and control cables are run. It can be a metal unit that is set in concrete or formed in a concrete slab. The top of the covers are level with the floor.

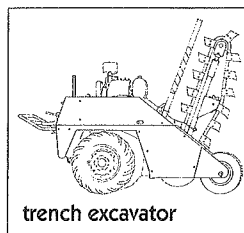


trenched footing (neat excavation)

A type of footing in which a trench has been excavated to the exact dimensions of the desired footing, and the concrete poured directly into the trench. This type of footing requires no formwork.

trencher *See trench excavator.*

trench excavator A self-propelled machine with a side-mounted shovel or chain of buckets, used to excavate trenches.



trench header duct

T

trench header duct A preformed duct laid in concrete slabs to provide raceways for wiring and communication lines.

trenching machine See **trench excavator**.

trench jack A hydraulic or screw jack used as a cross brace in a trench bracing system.

trench shield See **trench box**.

trestle A framework used to support a bridge. See also **sawhorse**.

trestle ladder A self-supporting, portable ladder that is often paired with another to form a portable scaffold system.

trial Term commonly applied to an action in a court of law.

trial batch A batch of concrete prepared to establish or check proportions of the constituents.

trial pit A small pit dug to investigate the soil, sometimes dug to bedrock or other dense material.

triangular scale A drafting instrument that is triangular in cross section and has a different scale on each edge. Some edges have two opposing scales, one two times the other, such as 1/8" and 1/4" equals 1'.

triangular truss A light wood roof truss used for short spans.

triangulation A method of surveying over long distances by establishing a network of triangles. Most sides in the network are computed from a known side that may be calculated, and two measured angles. Lengths are measured periodically as a check.

triaxial compression test A test whereby a specimen is subjected to a confining hydrostatic pressure, and then loaded axially to failure.

triaxial test A test whereby a specimen is subjected simultaneously to lateral and axial loads.

tricalcium aluminate A compound having the composition $3\text{CaO} \cdot \text{Al}_2\text{O}_3$, abbreviated C_3A . Its mineral phase name is *celite*.

tricalcium silicate A compound having the composition $3\text{CaO} \cdot \text{SiO}_2$, abbreviated C_3S . An impure form of it (alite or celite) is a main constituent of Portland cement. See also *alite*.

trig **1.** Bricks laid in the center of a wall to prevent sagging and keep it plumb. **2.** Metal clip used to hold a mason's line.

trigger The condition or event that initiates or causes an interlocking process to occur.

trigger start The ballast usually used with 15-watt and 20-watt straight fluorescent lamps.

trilateration A method of surveying similar to triangulation, except that distances are measured by electronic instruments, and the two angles are calculated. Quadrilaterals are used in addition to triangles.

trim Millwork, primarily moldings and/or trim to finish off and cover joints around window and door openings.

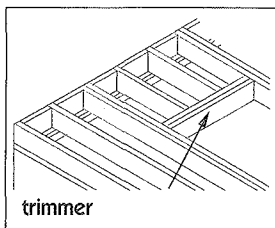
trim band A metal strip used as a closing band on sides or ends of grating panels.

trim bronze A copper-zinc alloy used for architectural trim.

trim hardware Decorative finish hardware that is functional or used to operate functional hardware.

trimmed opening See **cased opening**.

trimmer (header) **1.** A short beam that supports one or more joists or beams at an opening in the floor. **2.** A beam or joist inserted in a floor on the long side of a stair opening and supporting a header. **3.** Shaped ceramic tile used as bases, caps, corners, moldings, and angles.



trimming joist A joist parallel to the common joists, but of larger cross section, possibly two pieces nailed together, that support a trimmer.

trimming rafter A rafter supporting the end of a header. See also **trimming joist**.

trimstone (trim) Decorative masonry members on a structure built or faced largely with other masonry; includes sills, jambs, lintels, coping, cornices, and quoins.

tringle A small square ornament or fillet molding.

trip (release catch) A device that releases a mechanism, such as a pawl.

trip blank In environmental testing, it is a sample prepared with deionized water and shipped with other samples taken at a site to establish a baseline for follow-on analysis.

trip coil A control device that utilizes a solenoid to open a circuit breaker.

triple glazing Energy-saving windows composed of three panes of glass sandwiched together with air in between. Gases such as argon may be used to increase efficiency.

triple-phase motor See **three-phase motor**.

triple window A group of three windows with square tops. They give an effect similar to Palladian windows, but are less expensive.

triplex cable Electrical cable composed of three conductor cables twisted together.

tripod A three-legged, adjustable stand for an instrument.

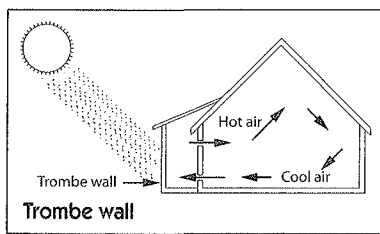
trivet A low support for a surveying instrument used where a tripod can not be accommodated.

troffer A long recessed lighting unit that is usually installed flush with the ceiling.

trolley beam An exposed steel beam on the underside of a structure, used to support a trolley crane.

trolley hoist Lifting apparatus that features a hoist that moves along an I-beam that is supported above the work area.

Trombe wall A sun-facing wall made of stone, concrete, or other thermal mass material that collects heat during daylight hours and releases it to the space behind the wall over a 24-hour period.



trompe l'oeil A painting technique that creates the illusion of three-dimensional architectural ornamentation on flat surfaces, such as moldings, paneling, and ceilings. Translated from the French, it means "trick of the eye."

trough A channel used to contain electric power or control cables.

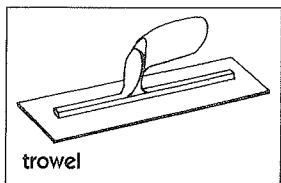
trough gutter See box gutter.

trough mixer See open-top mixer.

trough roof See M-roof.

trowel 1. A flat, broad-blade, steel hand tool used in the final stages of finishing operations to impart a relatively smooth surface to concrete floors and other unformed concrete surfaces.

2. Also a flat, triangular-blade tool used for applying mortar to masonry.

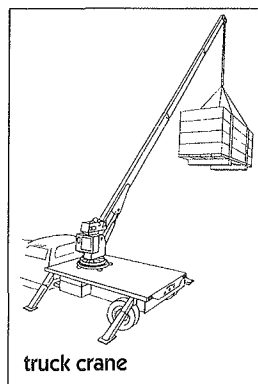


trowel finish The smooth finish surface produced by troweling.

troweling Smoothing and compacting the unformed surface of fresh concrete by strokes of a trowel.

troweling machine A motor-driven device used to trowel concrete. It functions via orbiting steel trowels on radial arms that rotate on a vertical shaft.

truck crane A crane mounted on a wheeled vehicle.



truck-mixed concrete See transit-mixed concrete.

truck mixer A concrete mixer suitable for mounting on a truck chassis and capable of mixing concrete in transit. See also inclined-axis mixer, open-top mixer, and agitator.

truck zoning device A freight elevator mechanism that allows the car to be maneuvered within a limited distance above a landing while the door and hoistway door are open.

true bearing The clockwise angle between a direction line and a meridian line that is referenced to the geographic North Pole.

true firs A collective term for a group of firs of the genus *Abies*, including white fir and grand fir.

true wood Heartwood.

trunk 1. The main wood shaft of a tree.

2. The shaft portion of a column.

3. Descriptive of the main body of a system, as a sewer trunk line.

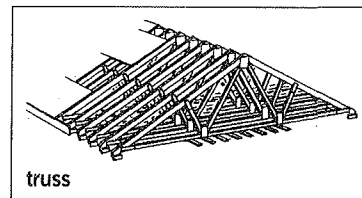
4. Transmission channel that runs between two central office or switching devices, connecting exchanges to the main telephone network.

trunk sewer A main sewer that receives flow from many tributaries, covering a large area.

trunnion A pivot consisting of two cylinders or pins projecting from the body of the pivoted object.

truscan order One of the five classical orders featuring columns in which the bottom one-third is straight and the top two-thirds are tapered.

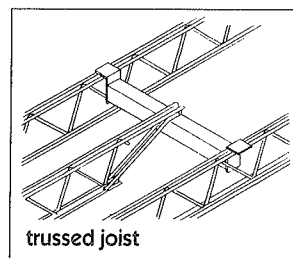
truss 1. A structural component composed of a combination of members, usually in a triangular arrangement, to form a rigid framework; often used to support a roof. 2. An escalator frame.



truss beam See trussed beam.

trussed beam A beam, usually composed of timber that is reinforced by a center post beneath the beam and two rods running from the bottom of the post to the ends of the beam.

trussed joist (open-web joist) A joist in the form of a truss. See also bar joist.

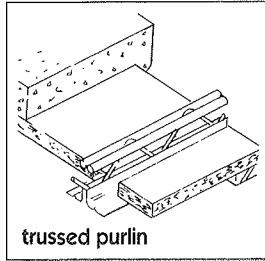


trussed partition A framed partition that is freestanding and does not depend on intersecting panels for support.

trussed purlin

T

trussed purlin A lightweight trussed beam used as a purlin.



trussed rafter roof A roof system in which the cross framing members are some form of light wood truss.

trussed ridge roof A pitched roof in which the upper support for the rafters is a truss.

trussed-wall opening Any opening in a framed structure with a truss system used to span the opening.

truss rod **1.** A metal rod used as a tension member in a truss. **2.** A metal rod used as a diagonal tie.

try cock Valve used as a backup system of determining water level in a boiler.

try square A normally graduated square, the legs of which are at 90°.

T-shore A shore with a T-head.

T-square (tee square) A guide, in the shape of a T, used in engineering and architectural drawing. The short arm slides along the edge of a drawing board, keeping the long arm in a parallel state.

tube-and-coupler scaffold A scaffold system using tubes for posts, bearers, braces, and ties. Special couplers connect the parts.

tube-and-coupler shoring A load-carrying assembly of tubing or pipe that serves as posts, braces, and ties. A base supports the posts, and special couplers connect the uprights and join the various members.

tube axial fans Single-width airfoil wheel fans arranged in a cylinder to discharge

air radially against the inside of the cylinder.

tubing Any material in the form of a tube.

tub mixer See open-top mixer.

tub trap The "U" shaped section of a bathtub drain pipe designed to hold a water seal to prevent sewer gasses from entering.

tubular discharge lamp An electrical discharge lamp with a tubular bulb.

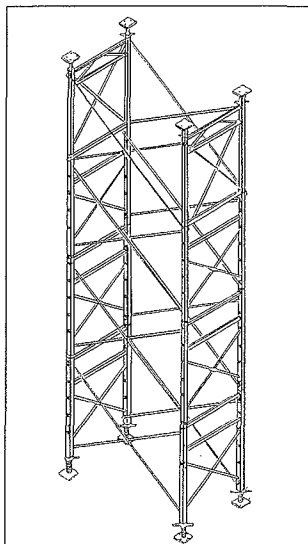
tubular fiber form Long tubes of compressed paper used as concrete forms. Often used to pour footings.

tubular lock A type of bored lock that encloses the bolt within a tube.

tubular saw See crown saw.

tubular scaffolding Scaffolding manufactured from galvanized steel or aluminum tube and connected by clamps.

tubular-welded-frame scaffold A scaffold system using prefabricated welded sections that serve as posts and horizontal bearers. The prefabricated sections are braced laterally with tubes and bars.



tubular-welded-frame scaffold

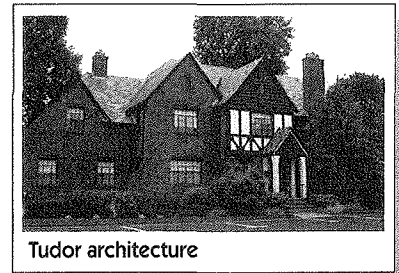
tuck A recess in a horizontal masonry joint formed by raking out mortar in preparation for tuck pointing.

tuck and pat pointing See tuck pointing.

tuck-in That part of a counterflashing, skirting, or roofing felt that is inserted in a reglet.

tuck pointing A method of refinishing old mortar joints. The loose mortar is dug out and the tuck is filled with fine mortar that is left projecting slightly or with a fillet of putty or lime.

Tudor architecture English architectural style characterized by steep roofs, small windows, tall chimneys, and shallow trim moldings.



Tudor architecture

tuff, volcanic tuff A highly porous, low-density rock comprising volcanic particles sometimes in stone applications or as a thermal insulation material.

tufted carpet Carpet manufactured by pile yarn punched through carpet backing material that has been previously woven. The pile is cut after.

tulipwood A close-textured wood, yellowish or rose-colored; used for veneers, inlay, and millwork.

tumbler The mechanism in a lock holding the bolt until operated by a key.

tumbler switch A lever-operated electric snap switch.

tumbling course A sloping course of brickwork that intersects a horizontal course.

tung oil An oil that dries to a clear finish and resists water, it is often used as a wood finish.

tungsten-halogen lamp (quartz lamp)

An incandescent lamp that consists of a tungsten filament, a gas containing halogens, and an envelope of a high-temperature resistant material, such as quartz. The lamp is small compared with lamps of similar wattage.

tungsten steel A very hard, heat-resistant carbon steel containing tungsten.

tunneling Excavating a horizontal hole greater than six feet in diameter.

tunnel test Refers to an ASTM standard test of a material's surface-burning characteristics.

tupelo *Nyssa aquatica*, *water tupelo*, and *Nyssa sylvatica*, *black tupelo*. Light, tough hardwoods largely of the southern and southeastern United States, used for paneling and turnings.

turbidimeter A device for measuring the particle-size distribution of a finely divided material by taking successive measurements of a suspension in a fluid.

turbidimeter fineness The fineness of a material such as soil or Portland cement, usually expressed as total surface area in square centimeters per gram, as determined with a turbidimeter. *See also* **Wagner fineness**.

turbidity The clarity of water, measured by light transmission through a water sample.

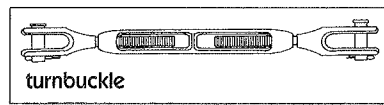
turbine Any of various machines that convert the kinetic energy of a moving fluid to mechanical energy. The turbine is often used for driving an electric generator.

turbine mixer *See* **open-top mixer**.

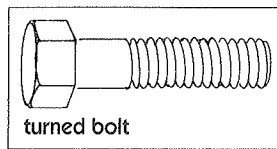
turf The uppermost layer of soil containing roots of propagated grass.

turnaround time (TAT) The amount of time required to complete a process. In reference to environmental testing, it refers to the time required to process an analysis of a sample.

turnbuckle A device for adjusting the length of a rod or cable, consisting of a right screw and a left screw coupled by a link.



turned bolt A machine bolt, usually with a hexagonal head, the shank of which is finished to a close tolerance.



turned work Pieces of stone or woodwork having a circular cross section, such as posts and balusters. Turned work is usually cut on a lathe.

turning Shaping objects by use of cutting tools while the piece to be shaped is rotated on a lathe.

turning angles The process of measuring angles between lines with a transit or similar instrument.

turning gouge Hand tool used to rough cut wood on a lathe.

turning piece A wood template used by a mason to form a small arch that does not require centering.

turning point Surveying bench mark.

turning vane One of several curved fins that are placed inside ductwork at a change in direction in order to promote better airflow.

turnkey contract A contract similar to design/construct except the contractor is responsible for all financing, and owns the work until the project is complete and turned over to the owner.

turnkey job A project constructed under a turnkey contract.

turnkey system A system in which the hardware and software, as well as

assembly and installation, is sold as a complete package by the vendor.

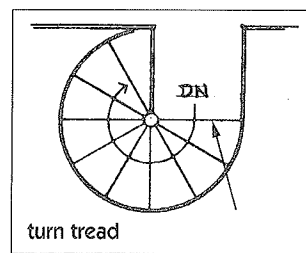
turn knob A small knob on the inside of a door, used to control the bolt.

turn-of-the-nut method A method used to pre-tension high-strength bolts. The nut is turned from the snug-tight position by either a man using his full strength on a wrench, or a few hits with an impact wrench.

turn piece A small knob used to control a deadbolt from the inside of a door, usually crescent- or oval-shaped for gripping with thumb or fingers.

turnstile A barrier rotating on a vertical axis, usually allowing movement in one direction only and admitting one person at a time. A turnstile is sometimes coin- or token-operated.

turn tread A wedge-shaped tread used where a stair changes direction.



turnup That edge of roofing material turned up along a vertical surface.

turpentine A thin, volatile oil obtained by steam distillation from the wood or exuded resin of certain pine trees. Turpentine was once widely used as a paint thinner and solvent, but now is replaced by solvents derived from petroleum.

tusk Rocks or masonry protruding from the face of a wall.

tusk tenon A tenon with stepped reinforcing at the lower side.

twin brick A double-sized brick.

twin cable A cable consisting of two parallel, insulated conductors fastened side-by-side through the insulation, or by common wrapping.

twin-filament lamp

T

twin-filament lamp An incandescent lamp with two filaments that are wired independently, used as double-function lamps as in automobile stop lights or as three-level wattage lamps.

twin pug (pugmill) A mill with two blade-supporting shafts running in opposite directions.

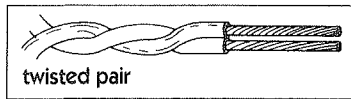
twin saw, twin (double arbor saw) Two circular saws mounted one above the other to cut in the same plane.

twin tenons See **double tenons**.

twist The distortion from a flat plane caused by the turning or winding of the edges of a board.

twist drill A drill with one or more helical cutting grooves, used to drill holes in metal, wood, and plastic.

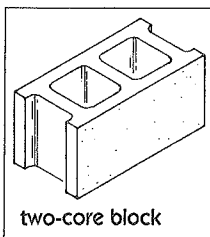
twisted pair Two single, insulated wires that have been twisted together to reduce the likelihood of interference to and from other wire pairs.



two-by-four A commonly used piece of timber with nominal dimensions 2" thick by 4" wide, i.e., 5 cm thick by 4 cm wide.

two-coat work The application of two coats of plaster: a base coat followed by a finish coat.

two-core block A concrete masonry unit with two hollow cells.



two-four-one (2-4-1) Structural wood panels, at least 1-1/8" thick, designed for single-floor applications over joists spaced 48" apart and also used as roof sheathing in heavy timber construction. The term is synonymous with APA-Rated Sturd-I-Floor and is a registered trade name of the American Plywood Association.

two-handed saw A large saw with two handles intended to be worked by two people; used for felling trees or cross cutting logs, largely replaced by chain saws.

two-light window A window that is two panes high or wide. See also **gemel window**.

two-man riprap Stones suitable for riprap but of a size that can only be handled by two people.

two-part line A single strand, rope, or cable that is doubled back around a sheave to double the capacity.

two-point suspension scaffold See **swinging scaffold**.

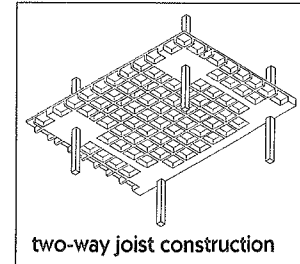
two-stage absorption A refrigeration system in which the hot refrigerant (water) vapor travels to a second generator. There, upon condensing, it supplies heat for further refrigerant vaporization from the absorbant of intermediate concentration that flows from the first generator.

two-stage curing A process whereby concrete products are cured in low-pressure steam, stacked, and then autoclaved.

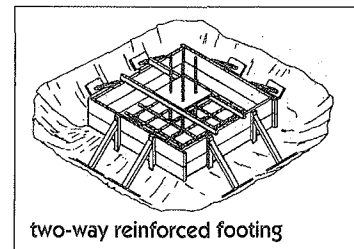
two-step sealed bidding A procurement procedure whereby contractors submit technical proposals in response to government performance specifications. Each contractor whose technical proposal is acceptable then submits a sealed bid in accordance with normal bidding procedures.

two-way footing See **two-way reinforced footing**.

two-way joist construction Floor or roof construction in which the floor or roof is supported on two mutually perpendicular systems of parallel joists.



two-way reinforced footing A footing having reinforcement in two directions, generally perpendicular to each other.



two-way reinforcement (two-way system) A system of reinforcement. Bars, rods, or wires are placed at right angles to each other in a slab, and are intended to resist stresses due to bending of the slab in two directions.

two-way slab A reinforced concrete slab in which the main reinforcing runs in two directions, parallel to the length and width of the panel.

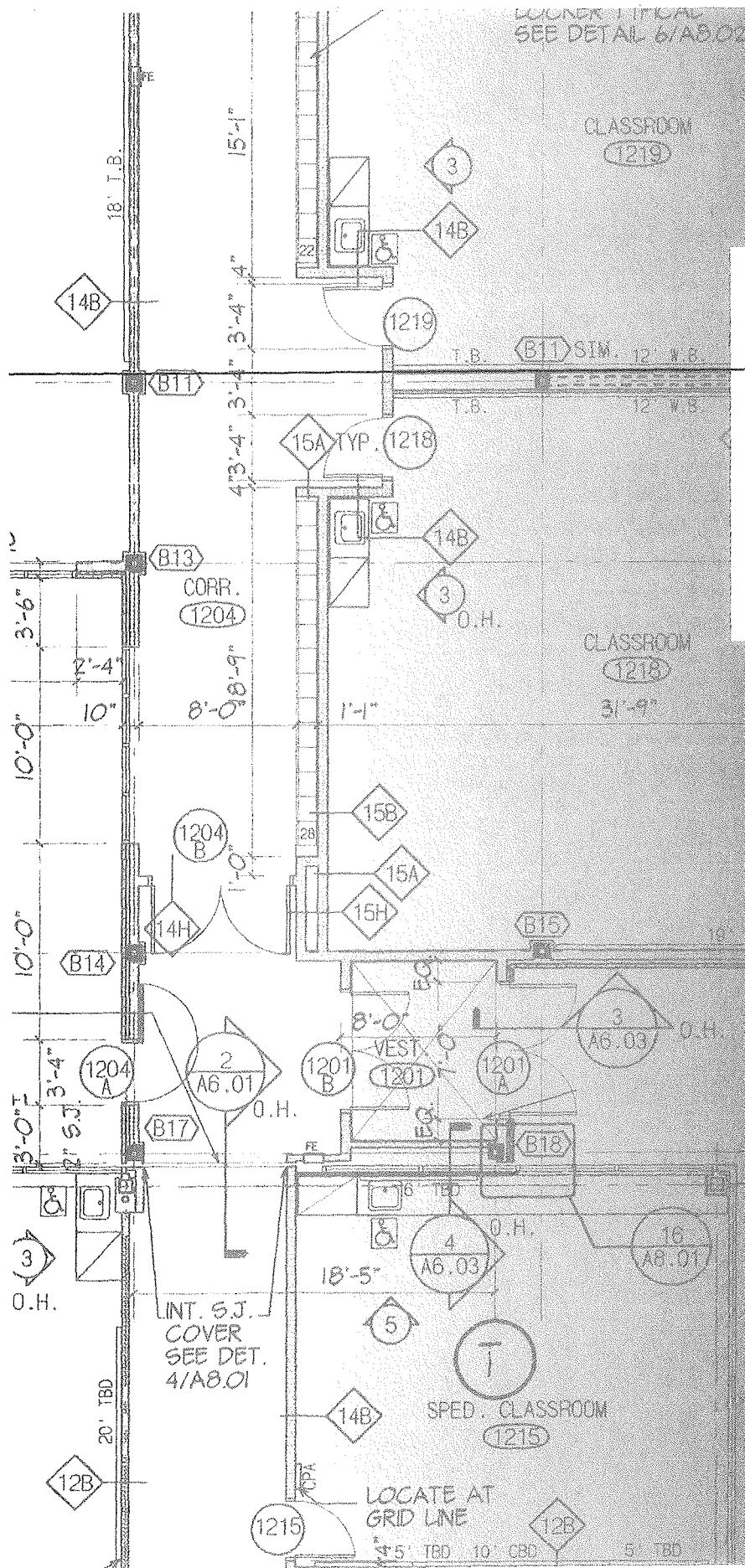
two-way system See **two-way reinforcement**.

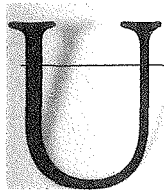
Type I & IA Duty Rating Safety ratings for ladders based on load limits. Type I is rated for 250 lbs. Type IA is rated for 300 lbs.

type S fuse A mechanism designed to fit into a screw shell socket to determine whether the fuse is blown. Available in 15, 20, and 30 amperes.

Type X A fire-resistant type of gypsum wallboard.

Tyvek® house wrap Brand name for a weather protector building wrap. In addition to adding insulation, it works to keep moisture from penetrating walls while also allowing the building to "breathe."





Abbreviations

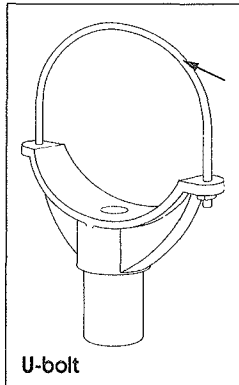
The abbreviations listed below are commonly used in the construction industry.

u unit	unmtd unmounted
U uranium	uns unsymmetrical
UCI uniform construction index	up upper
UCS unconfined compressive strength	UPS uninterruptible power supply, United Parcel Service
UDC universal decimal classification	ur, UR urinal
U/E unedged	URD underground residential distribution
UF, UGND underground feeder	USBM U.S. Bureau Of Mines
Ug micrograms	USBR U.S. Bureau Of Reclamation
ugnd underground	USG United States Gypsum
UHF ultrahigh frequency	USP United States Primed
UL Underwriters' Laboratories, Inc.	UST underground storage tank
Uld unloading	Util utility
ult ultimate	UTMCD Uniform Traffic Manual For Control Devices
unassm unassembled	UTP unshielded twisted pair
unfin unfinished	UV ultraviolet
unglz unglazed	
unhtd unheated	
unidir unidirectional	
unins uninsurable	

U Definitions

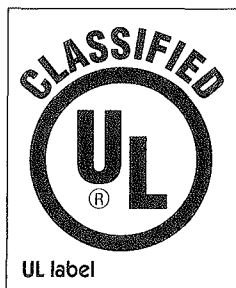
unbound base

U-bolt A bolt formed in the shape of the letter U, with threads on the ends to accommodate nuts.



U factor A measure of thermal transmission.

UL label A seal of certification attached by Underwriters' Laboratories, Inc. to building materials, electrical wiring and components, storage vessels, and other devices, attesting that the item has been rated according to performance tests; is from a production lot that made use of materials and processes identical to those of comparable items that have passed fire, electrical hazard, and other safety tests; and is subject to the UL reexamination service.



ultimate design resisting moment
The theoretical, applied bending moment that will cause failure in a

reinforced concrete member through yield in the tensile reinforcing steel or crushing of concrete.

ultimate load The maximum load a structure can bear before its failure due to buckling of column members or failure of a component.

ultimate set The final degree of firmness obtained by a plastic compound after curing.

ultimate shear stress The stress at a section loaded to its maximum in shear. *See also shear strength.*

ultimate strength The maximum resistance to load that a member or structure is capable of developing before failure occurs. With reference to cross sections of members, the largest moment, axial force, torsion, or shear a material can sustain without failure.

ultimate strength design *See strength design method.*

ultimate wiring capacity The average load per unit of area required to cause the rupture and subsequent failure of a supporting mass.

ultrasonic soldering A soldering process, usually performed without a flux, wherein unwanted surface films are removed from the base metal by transmitting high frequency sounds through molten solder, resulting in a more effective welding of the base metal with the solder.

ultrasonic testing A non-destructive method used to test the structural integrity of a pile or a metal element.

ultrasonic welding A process in solid-state welding wherein the metal parts are held together under pressure and joined by applying high frequency sound waves to their surface.

ultraviolet Literally beyond violet in the color spectrum. A minor component of the sun's radiation, it is also produced artificially in arc lamps.

ultraviolet lighting system 1. An air filtration system that uses ultraviolet light to kill mold and bacteria in the airstream. 2. Any lighting system designed to provide ultraviolet light.

umbrella liability insurance

Insurance that provides direct coverage for losses that are not covered by other policies (such as employer's liability, general liability, etc.) *See also liability insurance.*

unbalanced bid A contractor's bid based on increased unit costs for tasks to be performed early and decreased unit costs for later tasks. The unbalanced bid is used in an attempt to get money early to finance later parts of a job.

unbalanced partition A wall built with two layers of drywall on one side and a single layer on the other. Such an imbalance occurs when fire or sound insulation is just needed on one side.

unbalancing A technique used in the pricing process to allocate estimated costs to accounts whose definitions do not fully reflect the nature of the cost being allocated. The purpose of unbalancing is to achieve a desired business result such as improved cash flow. For example, a disproportionate amount of overhead costs may be allocated in a contract bid to early project activities so that early income is maximized. *

unbonded member A posttensioned, prestressed concrete element in which tensioning force is applied against end anchorages only, with tendons free to move within the elements.

unbonded posttensioning

Posttensioning in which the tendons are not grouted after stressing.

unbonded tendon A tendon not bonded to the concrete section.

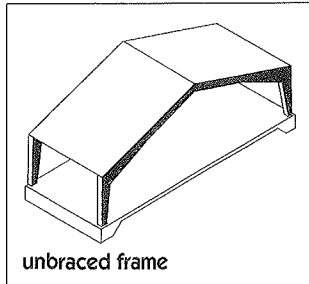
unbound base Material without a binder added.

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unbraced frame

U

unbraced frame A structural frame, resistant to the lateral load carried, due to the ability of its members and connections to withstand bending and shear stresses without additional diagonal bracing, K-bracing, or other extra supporting devices.



unbraced length The greatest length between points on a compression member not restrained against lateral movement by beams, slabs, or bracing.

unbraced length of column Distance between adequate lateral supports.

unbuttoning Unfastening rivet steel connections by breaking off the heads of rivets.

uncased pile An unlined concrete pile, often reinforced, that has been poured directly into a bored hole in the ground.

uncertainty 1. The total range of events that may happen and produce risks (including both threats and opportunities) affecting a project. (Uncertainty = threats + opportunities.) 2. All events, both positive and negative whose probabilities of occurrence are neither 0% nor 100%. Uncertainty is a distinct characteristic of the project environment. *

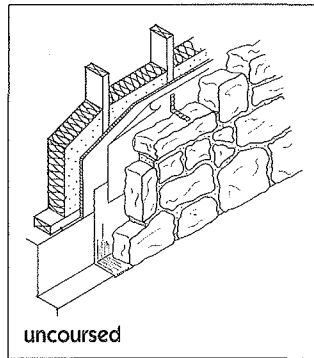
unclassified excavation An excavation priced with a single unit cost, regardless of whether the excavator finds loose fill or embedded rock. Bidders on an unclassified excavation assume the risk for whatever appears.

unconfined compressive strength (UCS) A measure of soil bearing capacity, determined by a variety of tests.

unconscionability With respect to contracts, where one party takes advantage of another party's inexperience, or does not give a fair explanation of the contract terms. A contract that is unfair or unconscionable is not enforceable.

unconsolidated Not compacted.

uncoursed Descriptive of irregularly placed masonry, which is not laid in courses with continuous horizontal joints, but in a seemingly random pattern.



underbed In terrazzo floor construction, the base mortar, usually horizontal, into which strips are embedded and on which terrazzo topping is applied.

undercloak 1. The part of a lower sheet in sheet metal roofing that serves as a seam. 2. A course of tiles or slate used in roofing to provide an underlayer for the first course installed at the eaves.

undercoat 1. A coat of paint that improves the seal of wood or of a previous coat of paint, and provides a superior adhesive base for the top coat. 2. A paint used as a base for enamel. 3. A colored primer paint.

undercourse Low-grade, usually #4, shingles used as the initial layer of material at the eaves of a roof. See also undercloak.

undercured Descriptive of concrete, paint, sealant, or other substances applied in wet or elastic form that have not had time to harden properly because of unsuitable environmental conditions.

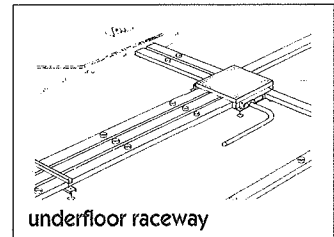
undercut To cut away a lower portion of architectural stonework, creating a projection above it that functions as a drip.

undercut door A door with greater than normal clearance at the floor to give more ventilation to an area.

underdrain A drain installed in porous fill under a slab to drain off ground water.

underfloor heating A heating system that uses embedded pipes or electric heating cables beneath a finished floor so that heat radiates steadily from floor level.

underfloor raceway A raceway installed beneath a finished floor to distribute electric conductors and communications wiring. Suitable for use in a concrete floor.



underground Items or installations that are below grade or ground level.

underground facilities All pipelines, conduits, ducts, cables, wires, utility access-ways, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities that have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic, or other control systems or water. *

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underground feeder (UF) cable

Cable rated for external, underground use.

underground piping Piping that has been or will be laid beneath the surface of the ground.

underground storage tank (UST)

A tank system that has at least 10% of its volume underground.

underlay A material, such as asphaltic felt, that isolates a roof covering from the deck. *See also underlayment and carpet underlayment.*

underlayment Structural wood panels designed to be used under finished flooring to provide a smooth surface for the finish material.

underlining felt The material, usually a Number 15 felt, applied to a wood roof deck before shingles are laid.

underpass A roadway that crosses under another roadway.

underpinning The construction of new substructure support beneath a column or a wall, without removing the superstructure, in order to increase the load capacity or return it to its former design limits.

under protest A term that signifies that while complying with direction or performance of an action, one is not conceding that it is a legal requirement of the agreement and further reserves the right to contest the issue at a later date or to file a claim.

underrun 1. Opposite of overrun; same as pickup; the (lesser) difference between the actual cost and the estimate.

2. Decrease in estimated quantity.

undersanded With respect to concrete, containing an insufficient proportion of fine aggregate to produce optimum properties in the fresh mixture, especially workability and finishing characteristics.

underslung car frame The car frame of an elevator with fastening sheaves for hoisting cables attached at or below its platform.

underwriter An insurance company or an employee of the insurance company who is responsible for approving the issue of policies. Underwriters approve of the amounts, the terms, and the conditions of the policies.

Underwriters' Laboratories, Inc. (UL)

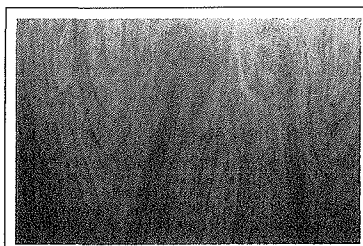
A private, nonprofit organization that tests, inspects, classifies, and rates devices and components to ensure that manufacturers comply with various UL standards.

Underwriters' loop *See Hartford loop.*

undisturbed sample A sample taken from soil in such a manner that the soil structure is deformed as little as possible.

undressed Descriptive of lumber products that have not been surfaced.

uneven grain Wood grain showing a distinct difference in appearance between springwood and summerwood. Examples are ring-porous hardwoods such as oak, and softwoods such as yellow pine that have soft springwood and hard, dense summerwood.



uneven grain

unfaced insulation Board, batt, or blanket insulation without a vapor barrier.

unglazed tile A hard ceramic tile of homogeneous composition throughout, deriving its color or texture from the materials used and the method of manufacture. The unglazed tile is used for floors or walls.

uniform angle sander A drywall finishing tool with a right-angled sanding device that can be adjusted to fit corner angles. The tool enables a worker to sand both sides of a corner simultaneously.

Uniform Commercial Code (UCC)

A model law developed to govern commercial transactions.

Uniform Fire Code™ A model law maintained by the National Fire Protection Association devoted to ensuring practices consistent with protecting life and property from fire, explosion, and hazardous materials and conditions.

uniform grading A particle-size distribution of aggregate in which pan fractions are approximately uniform with no one size or group of sizes dominating.

uniformity coefficient A coefficient related to the size distribution of a granular material, obtained by dividing the size of the sieve of which 60% of the sample weight passes by the size of the sieve of which 10% of the sample weight passes.

uniform load A load distributed uniformly over a structure or a portion of a structure.

uniform system A coordinated system developed by the American Institute of Architects (AIA) whereby construction specifications, product literature, technical data, and cost accounting are organized into several divisions based on an interrelationship of place, trade, function, or material.

unilateral modification A change in the contract requirements unilaterally directed by the owner.

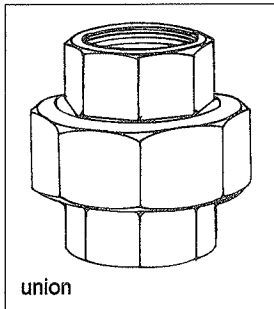
uninterruptible power supply

An electrical supply system that will continue to provide current during a power outage.

union

U

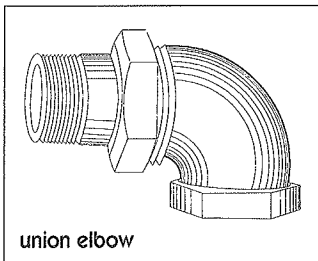
union 1. A confederation of individuals who share the same trade or similar trades and who have joined together for a common purpose. **2.** A pipe fitting used to join two pipes without turning either pipe, consisting of a collar piece that is slipped on one pipe, and a shoulder that is threaded or soldered on that pipe and against which the collar piece bears. Unions allow dismantling a fitting without disturbing the pipe.



union bend See **union elbow**.

union clip A fitting used to connect two rainwater gutters into one functioning unit.

union elbow A pipe elbow outfitted with a union coupling at one end that makes it possible for the coupling end to connect with the end of a pipe without turning or disturbing the pipe.



union fitting See **union elbow** or **union tee**.

union joint A pipe joint made using a union.

union tee A pipe tee with a union-type joint on one end.

union vent See **dual vent**.

unit air-conditioner See **packaged air-conditioner**.

unitary air-conditioner A fabricated assembly of equipment to move, clean, cool, dehumidify, and sometimes heat the air, consisting of a fan, cooling coil, compressor, and condenser.

unit construction See **modular construction**.

unit cooler See **packaged air-conditioner**.

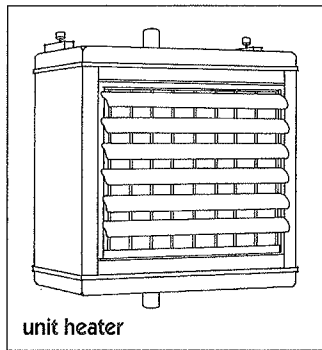
unit cost The cost per unit of measurement.

unit cost contract A contract for construction with a stipulated cost per unit of measure for the volume of work produced.

unit costs The actual costs of items or materials when work has been completed.

united inches The sum of the length and width of a piece of rectangular glass, each in inches.

unit heater A factory-assembled heating unit consisting of a housing, a heating element, a fan and motor, and a directional outlet.



unit hours Work hours per unit of production. *

unitized Wood products securely gathered into large standard packages or units, usually fastened with steel straps and often covered by tough paper or plastic.

unit lock A preassembled lock.

unit masonry See **masonry unit**.

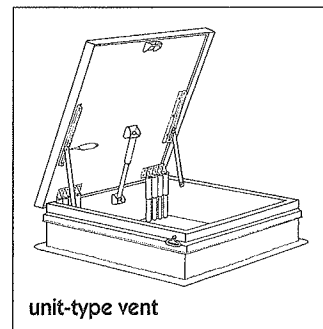
unit price 1. Current and accurate cost of materials, equipment, and labor used to develop a unit price estimate. **2.** The sum stated in a project bid representing the price per unit for materials and/or services.

unit price contract A construction contract in which payment is based on the work done and an agreed on unit price. The unit price contract is usually used only where quantities can be accurately measured.

unit rise In a stairway, the distance from the top of one tread to the top of the next. May be calculated by dividing the total rise by the total number of risers.

unit run In a stairway, the distance between the face of one riser to the face of the next. May be calculated by dividing the total run by the number of treads.

unit-type vent One of several relatively small openings on the roof of a structure, equipped with a metal frame and housing as well as manual or automatic hinged dampers, which are opened in case of fire.



unit vent See **dual vent**.

unit ventilator A unit with operable air inlets, and often with heating and/or cooling coils, that conveys outdoor air into an interior room.

unit water content 1. The quantity of water per unit volume of freshly mixed concrete, often expressed as pounds or

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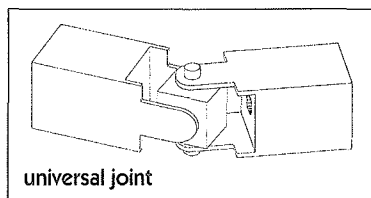
gallons per cubic yard. **2.** The quantity of water on which the water-cement ratio is based, not including water absorbed by the aggregate.

unit weight See *bulk density and specific gravity*.

universal Descriptive of a door lock, door closer, or similar piece of hardware that can be used on either a left-hand or right-hand swing door.

universal drill A power drill with a drill head that can be rotated or swiveled for special applications.

universal joint A coupling between two shafts set at an angle that allows them to rotate and swivel.



universal joint

universal motor A motor that can operate on either alternating or direct current and is usually less than one horsepower.

unjust enrichment A situation in which one party unfairly receives and retains a benefit, usually work, without compensation.

unkeyed Loose plaster that has become detached from the lath, requiring additional repair other than canvassing.

unlimited schedule Infinite schedule, schedule produced without resource constraint. *

unloader A control for an electric-motor-driven compressor. The unloader controls the pressure head of the compressor and allows the motor to be started at low torque by disconnecting one or more cylinders during the initial period of operation.

unmerchantable Logs or products that are faulty and not saleable.

UN number A classification code assigned to a particular material by the Department of Transportation.



unprotected corner Corner of a slab with no adequate provision for load transfer, so that the corner must carry over 80% of the load. See also *protected corner*.

unreinforced concrete See *plain concrete*.

unrestrained member A structural member that is allowed to rotate freely about its supports.

unseasoned Lumber that has not been dried to a specified moisture content before surfacing. The American Softwood Lumber Standard defines unseasoned lumber as having a moisture content above 19%.

unsound Not firmly made, placed, or fixed, and thus subject to deterioration or disintegration during service exposure.

unsound plaster Hydrated lime, plaster, or mortar that contains particles that are unhydrated and may expand later, causing popping or pitting.

unstable soil Earth material, other than running, that because of its nature or the influence of related conditions, cannot be depended on to remain in place without extra support, such as would be furnished by a system of shoring.

unstiffened member A structural member or portion thereof that must withstand

compressive force, but is not reinforced in the direction perpendicular to that in which it bends most readily.

unsupported wall height Masonry wall construction limit for wall height set by local codes determined by ratio of wall thickness to height of wall.

unusually severe weather The kind of weather that is in itself severe and can be of violent nature. If the average weather over time is significantly different from the normal, then it is said to be other than normal. In either case, if such weather affects the job and causes a delay, it may be excusable and form the basis for a contract adjustment for time and possibly money once all relevant contract clauses are considered. *

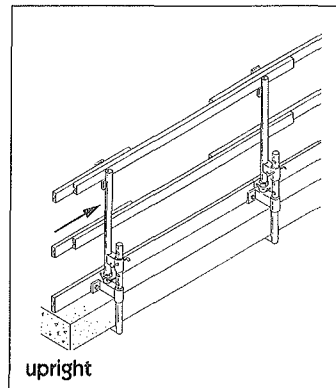
upcharge An additional charge for performing some extra service or providing special processing.

update To revise the estimate, schedule, or other planning deliverable to reflect the most current information on the project. *

updating The regular review, analysis, evaluation, and reporting of progress of the project, including recomputation of an estimate or schedule. *

uplift The upward load that wind or water pressure can create on a building.

upright A vertical length of stone or timber. Also any vertical structural member, such as a stanchion.



upright

upset

U

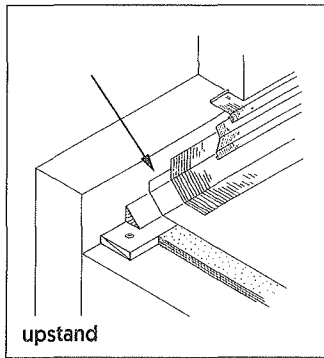
upset **1.** To make an object or part of an object shorter and thicker by hammering on its end. **2.** A flaw in timber caused by a heavy blow or impact that splits fibers across the grain. **3.** In welding, an increase in volume at the point of the weld caused by applied pressure.

upset price See **guaranteed maximum cost**.

upset welding A process of resistance-welding making use of both the pressure and heat generated by the flow of current as it passes through the resistance provided at the contact point of the surfaces being welded.

upstairs The floors of a house located above the ground or main floor.

upstand (upturn) That portion of a flashing or roof covering that is run up a wall without being tucked in, and which is usually covered with stepped flashing.



upstanding beam A beam projecting above a concrete floor rather than concealed beneath it.

uptime Time available for a machine to accomplish work (contrast with **downtime**).

upturned beam A concrete beam that extends above the slab it is designed to support.

urban area An area within the city limits or closely linked to the city by use of common services or utilities.

urban heat islands Asphalt-laden, typically urban areas, that are several degrees hotter than surrounding locations.

urban planning See **city planning**.

urban renewal The improvement of deteriorated and underused portions of a city. Urban renewal usually implies improvement through city, state, and federal programs, including demolition of slums and sales of properties to others, rehabilitation of relatively sound structures, and control measures to prevent further deterioration.

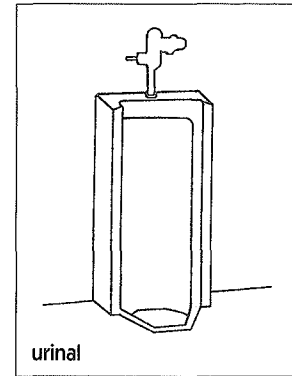
urban sprawl Uncontrolled spread of development outward from urban centers into more natural areas in an inefficient, unplanned, and wasteful way.

urea-formaldehyde foam insulation (UFFI) Insulation used in wall cavities as an energy conservation measure during the 1970s that has relatively high indoor concentrations of formaldehyde.

urea resin adhesive A powder that is mixed with water before use and has high early strength and good heat resistance. Urea resin adhesive is not recommended for exposure to moisture or use in poorly fitted joints.

urea resin glue Urea-formaldehyde resin, an adhesive used in the manufacture of hardwood plywood and interior particle-board panel products. Urea is a soluble, crystalline material found in the urine of mammals, but it is also produced synthetically for the manufacture of plastics and adhesives.

urinal A plumbing fixture designed for the collection of urine and equipped with a water supply for flushing.



usable life See **pot life**.

useful life The period of time over which an investment is considered to meet its original objective. *

U-stirrup A rod shaped like a "U"; used in reinforced concrete construction.

U-strap Column anchorage to a concrete base using a steel U-shaped anchor bolt embedded in concrete.

usury laws Laws that limit the amount of interest that can be charged on a loan. These limits vary from state to state. In some states, the limits are applied only to certain types of loans. Other states have no usury laws.

U-tie A wall form tie made of heavy wire bent into a U-shape.

utility **1.** A grade of softwood lumber used when a combination of strength and economy is desired. Utility grade is suitable for many uses in construction, but lacks the strength of **Standard**, the next highest grade in light framing, and is not allowed in some applications. **2.** A grade of Idaho white pine boards, equivalent to #4 **Common** in other species. **3.** A grade of fir veneer that allows white speck and more defects than are allowed in **D grade**. Utility grade veneer is not permitted in panels manufactured under Product Standard PS-1-83. **4.** Gas, water, electrical and sewer beyond 5 feet from a building.

utility easement areas Areas utility company personnel are legally authorized to access in order to service the lines.

utility and better (Util&Btr) A mixture of light framing lumber grades, the lowest being utility. The “*and better*” signifies that some percentage of the mixture is of a higher grade than utility, but not necessarily of the highest grade. In joist and plank grades, the corresponding term is “#3&Btr.”

utility drawings Graphic depictions of locations of water, gas, sanitary sewer, and electric utilities that will service the building.

utility knife See board knife.

utility pole An outdoor pole installed by a utility company for the support of telephone, electric, and other cables.

utility sheet Metal sheeting that is mill-finished and cut into numerous widths and lengths for general use within the building construction industry.

utility survey A map depicting the site utilities existing on a piece of property.

utility tractor A tractor of low to moderate horsepower used in construction to tow auxiliary equipment and for other site preparation work.

utility transformer A transformer of primary and secondary wire coils that reduces voltage supplied by a utility to a facility.

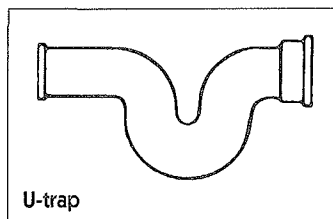
utility vent A pipe that helps provide an air supply within a drainage system or fixture to prevent siphonage. The vent rises above the highest water level of the fixture, and turns downward before connecting to the main vent.

utility window A hot-rolled steel window, generally inexpensive, equipped with a hopper light and a fixed light and used principally in garages, shops, and basements.

utilization equipment

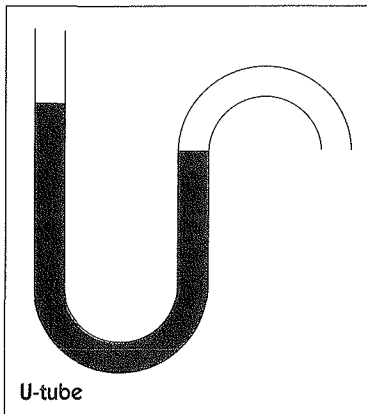
Equipment powered by electric energy and used in heating, lighting, and numerous mechanical operations.

U-trap A running trap, built in the shape of a U, that forms a seal against the passage of gasses in a pipe, while allowing liquid to flow freely.



U-trap

U-tube (manometer) A U-shaped glass tube filled with water or mercury and used to measure pressure by liquid displacement.



U-tube

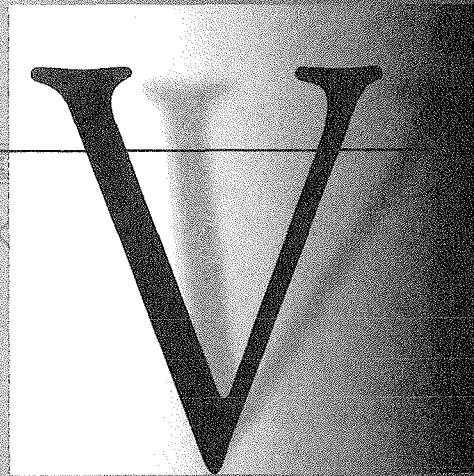
U-type concrete stairs Cast-in-place concrete stairs, usually enclosed in a stairwell in which the stair makes a 180° turn at a landing.

U-value (thermal transmittance)

The time rate of heat flow per unit area between fluids on the warm side and cold side of a barrier, calculated in accordance with the difference in unit temperature between the two test fluids.

LOCKER TYPICAL
SEE DETAIL 6/A6.02

CLASSROOM
(1219)



CLASSROOM
(1218)
31'-9"

B15

3
A6.03 O.H.

B18

4
A6.03 O.H.

16
A8.01

SPED. CLASSROOM
(1215)

LOCATE AT
GRID LINE

5' TBD 10' CBD 5' TBD

INT. S.J.
COVER
SEE DET.
4/A8.01

1215

12B

5' TBD

5' TBD

5' TBD

18' T.B.

15'-1"

4'-3'-4" 3'-4" 4"

15A TYP. (1218)

14B

14B

15B

15A

15H

1204 B

1204 A

1201 B

1201 A

1201

1204 B

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Abbreviations

The abbreviations listed below are commonly used in the construction industry.

V volt, valve, V-groove, vertical shear	VHO very high output
VA volt amperes	Vib vibrating, vibrator
vac vacuum	vic vicinity
VAC volts alternating current	VIF verify in field
val value, valuation	vil village
van vanity	vis visibility, visual
VAP vapor	VIT vitreous, vitrified
var variation, varnished	vit ch vitreous china
VAR visual-aural range, volt-ampere reactive	Vitr vitrification
VAT vinyl-asbestos tile	vj V-joint
VAV variable air volume	VLDPE very low density polyethylene
VC veneer core	vlf very low frequency
VCP visual comfort probability	VLF vertical linear foot
VCT vinyl composition tile	VLR very long range
VD vapor density	voc volatile organic compound
VDC volts direct current	vol, VOL volume
vel velocity	V1S vee one side
ven veneer	vous voussoirs
vent, VENT ventilator, ventilate	VP vent pipe
ver version	VRP vinyl reinforced polyester
verm vermiculite	VS versus, vent stack, vapor seal
vert, VERT vertical	VT vacuum tube, variable time
VF video frequency, vinyl-faced	VTR vent through roof
VG vertical grain	VU volume unit
vhf very high frequency	

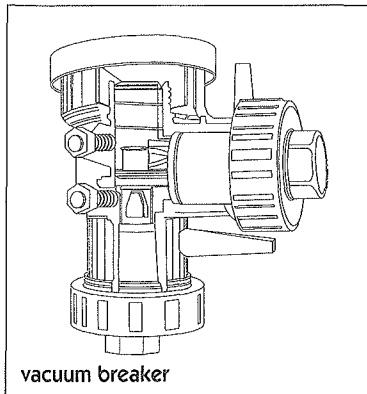
V Definitions

valued policy laws

vacation 1. Area that remains uncoated on a finished surface. 2. An allotted time for suspension of work by an employee of a company.

vacuum 1. A space that contains no matter. 2. A space with reduced air or water pressure.

vacuum breaker A pipe or fixture element in a water supply system that prevents siphon or suction action and the backflow that can result.



vacuum circuit breaker An electrical circuit breaker with its surge protection components housed in a vacuum.

vacuum concrete Concrete from which water and entrapped air are extracted by a vacuum process before hardening occurs.

vacuum pump A pump that removes air or steam from a space or system by producing a partial vacuum in the area treated.

vacuum saturation A process for increasing the amount of filling of the pores in a porous material, such as lightweight aggregate, with a fluid, such as water, by subjecting the porous material to reduced pressure in the presence of the fluid.

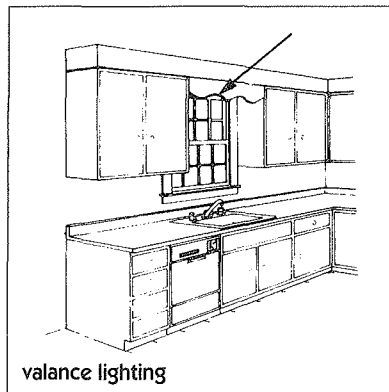
vacuum tank In a hot water heating system, a container that holds

condensate drawn into the boiler by a vacuum pump.

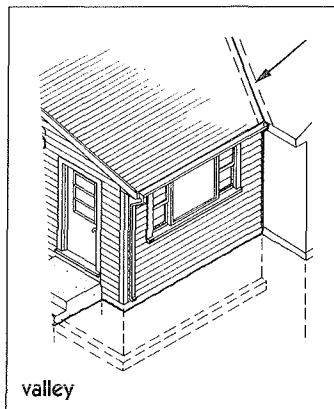
vadose zone The layer of unsaturated soil above the groundwater level.

valance 1. A board at the top of a window used to conceal the hanging mechanism for draperies. 2. A short drapery hung across the top of a window.

valance lighting Lighting from sources that are concealed and shielded by a board or panel at the wall-ceiling intersection. This lighting may be directed either upward or downward.



valley The place where two planes of a roof meet at a downward, or "V," angle.



valley board A board nailed to a valley rafter of a roof to accommodate the metal gutter.

valley flashing Sheet metal with which the valley of a roof is lined.

valley gutter The exposed open gutter in the valley of a roof, constructed with sloping sides.

valley jack A rafter in a roof system that is cut shorter than a common rafter and connects the ridge and a valley rafter.

valley rafter In a roof frame, the rafter that follows the line of the valley and connects the ridge to the wall plate along the line where the two inclined, perpendicular sides of the roof meet.

valley roof A pitched roof having one or more valleys.

valley shingle A specially cut shingle designated for placement next to a valley with grains that run parallel to the valley.

valley tile A trough-shaped roofing tile used at a roof valley to create a channel for water runoff.

valuation A process that determines a property's value prior to a lender granting a mortgage.

valuation fee An amount paid by a borrower to cover a lender's costs for obtaining an inspection.

value 1. The utility of an object or service or its worth consisting of the power of purchasing other objects or services.

2. The relative lightness or darkness of a color.

valued policy laws State laws governing the monetary amount insurance companies must pay relative to the value of a property loss.

value engineering

V

value engineering (VE) An analysis and comparison of cost versus value of building materials, equipment, and systems. VE considers the initial cost of construction, coupled with the estimated cost of maintenance, energy use, life expectancy, and replacement cost.

value of work performed The planned cost for completed work. *

valve Device that regulates a liquid or gas flowing through piping.

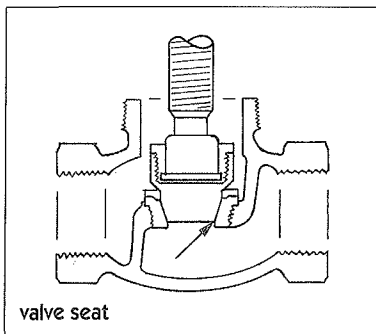
valve bag Paper bag for cement or other material, either glued or sewn, made of plies of kraft paper and completely closed except for a self-sealing paper through which the contents are introduced.

valve flutter Any undesirable movement of a valve during operation.

valve motor An electric or pneumatic motor that operates a valve within an air-conditioning system, regulating it at a location remote from the unit.

valve plug A valve component that moves against a stationary seat to control pressure or flow of a fluid.

valve seat The stationary portion of the valve which, when in contact with the movable portion, stops the flow.

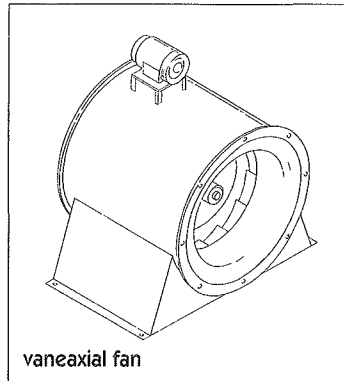


valve stem A threaded, spindle-like valve component that connects the valve plug to an external handle, gearset or actuator.

vanadium A metallic element used to strengthen some types of steel.

vandalism and malicious mischief insurance Insurance protection against loss or damage to a property, specifically caused by willful and malicious damage or destruction.

vaneaxial fan A fan with a disk-type wheel within a cylinder and a set of air-guided vanes on the wheel. The fan is either belt-driven or connected directly to a motor.



vaned elbow A square 90° duct elbow with turning vanes to uniformly direct the airflow.

vane test, vane shear test A test used to evaluate soil strength and consistency. After a hole is drilled into the earth, a spinning four-bladed shaft is inserted and the soil's resistance to the shaft's vanes is measured.

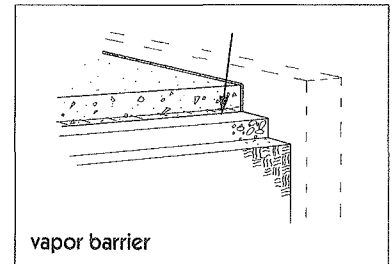
vanishing point A point on a perspective drawing towards which a series of normally parallel lines converge.

vanity A cabinet and lavatory combination for a bathroom.

van stone A type of joint made by using loose flanges on lengths of pipe whose ends are lapped over to give a bearing surface for the flange.

vapor barrier Material used to prevent the passage of vapor or moisture into

a structure or another material, thus preventing condensation within them. See also perm.



vapor heating system A system of steam heating functioning at or near atmospheric pressure, wherein the condensed liquid is returned to the boiler by gravity.

vapor lock The formation of vapor in a pipe carrying liquids, thereby preventing normal flow.

vapor migration Penetration of vapor through walls or roofs, caused by the vapor pressure differential between the inside and the outside of a structure.

vapor pressure A component of atmospheric pressure caused by the presence of vapor. Vapor pressure is expressed in inches, centimeters, or millimeters of height of a column of mercury or water.

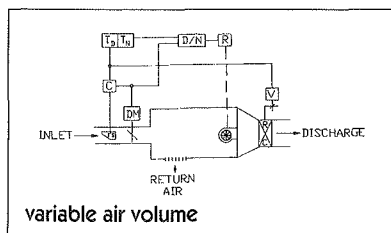
vapor retarder 1. A layer of material used to protect roof insulation and moisture sensitive roofing membranes from the damaging effects of internal humidity. 2. See vapor barrier.

vapor retarder felt A felt material containing asphalt and used for sealing.

vapor seal See vapor barrier.

variable air volume (VAV) An air distribution system capable of automatically delivering a reduced volume of constant temperature cool air to satisfy the reduced cooling load of individual zones.

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variable costs Those costs that are a function of production, e.g., raw materials costs, by-product credits, and those processing costs that vary with plant output (such as utilities, catalysts and chemical, packaging, and labor for batch operations). *

variable inlet vanes (VIV)

Vaned dampers installed at the inlet to a fan to produce a spin to the air entering the fan, which reduces the fan performance.

variable rate An interest rate that fluctuates during the term of the loan.

variable-volume air system

An air-conditioning system that automatically regulates the quantity of air supplied to each controlled area according to the needs of the different zones, with preset minimum and maximum values based on the load in each area.

variance 1. Permission granted to a landowner to depart from the specific requirements of a zoning ordinance or other regulatory requirement. A variance allows a landowner to use his or her land differently than specified in the ordinance. 2. A written authorization from the responsible agency permitting construction in a manner that is not allowed by a code or ordinance. 3. The difference between what was originally expected and what actually happened. *

variegated Descriptive of a material or surface having streak-marks, or patches of a different color or colors.

varnish A clear, colorless substance used chiefly on wood to provide a hard, glossy, protective film. Varnish is

manufactured from resinous products dissolved in oil, alcohol, or a number of volatile liquids.

varnish stain A colored transparent varnish with a lesser power of penetration than a true stain.

varved clay Sedimentary soil with alternating layers of clay and silt or fine sand that display contrasting colors as they dry, formed during the differing sedimentation conditions in various seasons of the year.

vats In the timber industry, large containers used for steaming logs or submerging them in hot water prior to peeling, slicing them into veneer, or cutting them into wafers. Vats were first widely used in hardwood veneer manufacturing, but are now frequently used in the manufacture of softwood plywood panels, waferboard, and oriented strand board.

vault 1. An enclosure built above or below ground large enough to accommodate human entry. Vaults are used to install, operate, and maintain electrical cables and equipment. 2. A masonry structure with an arched ceiling. 3. A room used for storage of valuable records and/or computer tapes that is of fire-resistant construction, has safe electric components, and has a controlled atmosphere.

V-bank filter box An air-handling unit section in which the filters are arranged in a "V" configuration in order to provide a greater filter surface.

V-beam sheeting Corrugated sheeting formed with flat, V-angled surfaces instead of a rippled or curved surface.

V-brick Brick that is vertically perforated.

V-cut 1. Descriptive of a style of lettering carved into stone in acute, triangular cuts. 2. A V-shaped saw cut or incision in wood.

vehicle 1. In painting, a substance, such as oil, in which pigments are mixed for application. 2. Any device for conveyance.

vehicular way A street, parking lot, or driveway used for vehicular traffic.

vein A thin layer or deposit of one material in another, usually in an approximate plane.

veining The lines that appear in soft bitumens as the material ages.

vellum A thin, but tough paper material used as drawing medium by design professionals for design drawings.

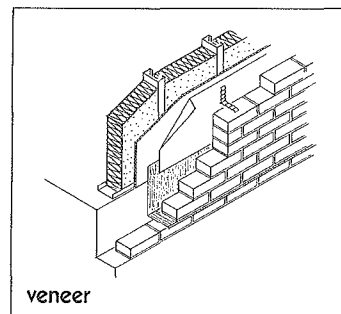
vellum glaze A finish with a semi-mat, satin appearance.

velocity head A measurement of the velocity of fluid through a pipe or watercourse. The velocity head is equal to the height that the fluid must fall to achieve that same velocity.

velocity riser A vertical pipe with a smaller diameter than adjacent piping that is used to increase the flow velocity of the material conveyed in the pipeline.

vendor An entity that provides standard materials or equipment for a project. *See also supplier.*

veneer 1. A masonry facing attached to the backup, but not so bonded as to act with it under load. 2. Wood peeled, sawn, or sliced into sheets of a given constant thickness and combined with glue to produce plywood. Veneers laid up with the grain direction of adjoining sheets at right angles produce plywood of great stiffness and strength, while those laid up with grains running parallel produce flexible plywood most often used in furniture and cabinetry construction. *See also laminated wood.*



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veneer adhesives

V

veneer adhesives Any of several basic substances used in the gluing of veneers to produce plywood. These include blood glue, soybean glue, and phenolic resins. Other adhesives made from urea, resorcinol, polyvinyl, and melamine are sometimes used in edge gluing, patching, and scarfing.

veneer base Gypsum lath sheeting, ordinarily cut in widths of four feet and in varying lengths and thicknesses, with a core of gypsum and a special paper facing that is receptive to veneer plaster.

veneered construction Construction of wood, reinforced concrete, or steel, faced with a thin layer of another material such as structural glass or marble.

veneered door A hollow or solid core door with veneer faces.

veneered plywood Plywood faced with a decorative veneer, usually wood or plastic.

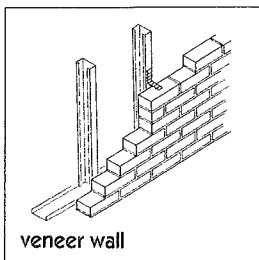
veneer holddown The part of a veneer clipper that holds down the veneer to ensure proper alignment with the clipper blade.

veneer plaster A mill-mixed gypsum plaster made up of one or two components and desired for its bond, strength, and ease of installation.

veneer saw A hand or power saw with a fine-toothed blade used to cut wood veneers.

veneer tie A wall tie designed to hold a veneer to a wall.

veneer wall A wall with a facing that is attached to, but not bonded to, the wall.



veneer wall

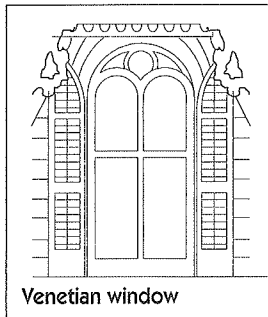
veneer wall tie See veneer tie.

Venetian blind 1. A blind made of thin slats mounted so as to overlap when closed and provide spaces for admitting light and/or air when open. The mounting usually consists of strips of webbing. The unit is operated by cords. 2. Adjustable exterior slatted shutters.

Venetian mosaic A type of terrazzo topping in which large chips of stone are incorporated.

Venetian plaster A wall plaster applied with a trowel in several layers and often coated with a polished waxed finish.

Venetian window See palladian window.



Venetian window

vent 1. A pipe built into a drainage system to provide air circulation, thus preventing siphonage and back pressure from affecting the function of the trap seals. 2. A stack through which smoke, ashes, vapors, and other airborne impurities are discharged from an enclosed space to the outside atmosphere. 3. Any opening serving as an outlet or inlet for air.

vent cap A piece at the top of a ventilation pipe.

vent connector A metal pipe connecting the exhaust of a burner to a chimney.

vented form A concrete form that retains the solid constituents of concrete and permits the escape of water and air.

vent flue See vent.

ventilating bead See draft bead.

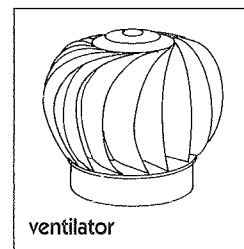
ventilating brick A brick with holes in it for the passage of air.

ventilating eyebrow See eyebrow.

ventilating jack A sheet metal hood over the inlet to a vent pipe to direct flow into the pipe.

ventilation A natural or mechanical process by which air is introduced to or removed from a space, with or without heating, cooling, or purification treatment.

ventilator 1. A device or opening in a room or building through which fresh air enters the enclosure and stale air is expelled. 2. A pivoted sash or framework, outfitted with hinged panes of glass that may be opened without opening the sash.



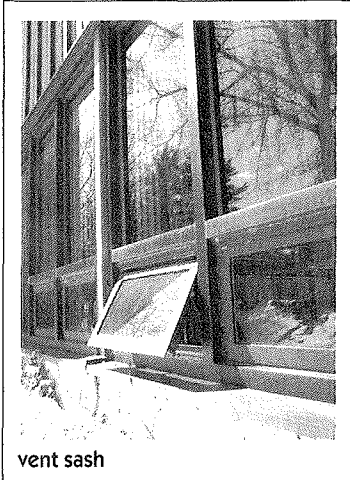
ventilator

ventilator frame An assembly designed to accommodate a pivoted sash, with two rails and two stiles into which the operable panes are set.

venting clip A device used to help cure and dry concrete or gypsum fill.

vent pipe A small-diameter pipe used in concrete construction to permit the escape of air in a structure being concreted or grouted.

vent sash A small, operable lite in a window, which may be swung open to allow some ventilation without opening the entire sash.



vent sash

vent screed A plaster screed with a vented portion, used in roof overhang soffits.

vent stack (main vent) A vertical vent pipe whose functions are to provide air circulation to or from any part of a building drainage system and to protect its trap seals from siphonage.

vent system **1.** Piping that provides a flow of air to or from a drainage system to protect trap seals from siphonage or back pressure. **2.** A chimney or vent combined with a vent connector to form a clear passageway for expulsion of vent gases from gas-burning equipment to the outside air.

venturi **1.** A short tube with a constriction used to measure liquid or gas velocity by the differential pressure as the liquid or gas flows. **2.** A constricted throat in an air passage of a carburetor used to mix fuel and air.

veranda A covered porch or balcony along the outside of a building, intended for leisure.

verbal quotation A contractor's record of a subcontractor's cost proposal for designated work. Quotes given by phone should be followed by a written proposal.

verdigris A bluish green patina that naturally forms on copper, bronze or brass over time as it is exposed to atmospheric conditions.

verge **1.** The edge that projects over the gable of a roof. **2.** A small shaft of a column employed for ornamental effect. **3.** The unpaved section of a road right-of-way.

vergeboard See bargeboard.

verge fillet A strip of wood that is fastened to the roof battens of a gable to cover the upper edges of the gable wall.

verification Testing to confirm that a product or service meets specifications.*

vermicated work A form of incised masonry surface with ornamental track-like grooves, frets, or knots, employed architecturally on wall surfaces and pavements.

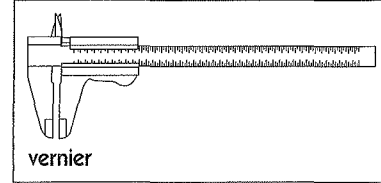
vermiculite A group name for certain clay minerals, hydrous silicates or aluminum, magnesium, and iron that have been expanded by heat. Vermiculite is used for lightweight aggregate in concrete and as a loose fill for thermal insulating applications.

vermiculite concrete Concrete in which the aggregate consists of exfoliated vermiculite.

vermiculite plaster A fire-retardant plaster covering for steel beams, concrete slabs, and other heavy construction materials, constituted with an aggregate of very fine exfoliated vermiculite.

Vermont slate A type of slate from Vermont used in paving and roofing.

vernier An auxiliary scale that slides along a larger scale and allows more accurate interpretation of subdivisions.



vertical angle An angle in a vertical plane.

vertical bar An upright muntin.

vertical bond Masonry bond with one brick or block placed directly on top of the next. See also **stack bond**.

vertical broken joint A tiling pattern that offsets each vertical row by half its length.

vertical circle A graduated circle mounted on an instrument so that the plane of the circle will be in a true vertical plane when the instrument is leveled.

vertical curve A parabolic curve in the vertical plane used to connect two highway grades in order to form a smooth transition.

vertical door A door that opens and closes from the top to the bottom or vice versa.

vertical exit A stairway, ramp, fire escape, escalator, or any other route of movement that serves as an exit from the floors of a building above or below street level.

vertical-fiber brick A paving brick cut with wire during the manufacturing process, and laid on pavement with the wire-cut side exposed to view.

vertical firing Mechanical arrangement of gas, oil, or coal burners in a furnace so that fuel is vertically discharged up from burners below or down from burners on top.

vertical force The load on a structure from a force acting vertically.

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vertically pivoted window

V

vertically pivoted window A window having a sash that pivots on a vertical axis near its center so the outside of the glass can be conveniently cleaned.

vertical photograph A photograph taken from an airplane looking straight down. The vertical photograph is used in aerial surveying.

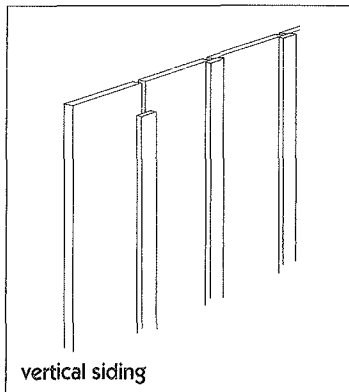
vertical pipe Any pipe or fitting that makes an angle of 45° or less with the vertical.

vertical sand drain A boring through clay or silt filled with sand or gravel to allow soil to drain. Most effective when bored to permeable soil below.

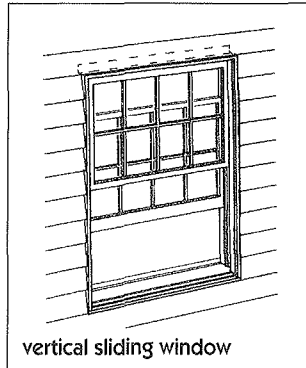
vertical sash See **vertical sliding window**.

vertical section An illustration of an object as it would appear if a vertical plane were cut through it. An example of a vertical section is a drawing of sedimentary soil layers or of the wood layers on a sheet of plywood.

vertical siding A type of exterior wall cladding consisting of wide matched boards.



vertical sliding window A window with one or more sashes that move only in a vertical direction and make use of friction or a ratchet device to remain in an open position.



vertical slip form A form that is jacked vertically during construction of a concrete structure. Movement may be continuous with placing or intermittent with horizontal joints.

vertical spring-pivot hinge A spring hinge that is mortised into the heel of a door, which in turn is fastened with pivots to its door head and the floor.

vertical tiling Tile that is hung on the surface of a wall in a vertical arrangement and protects the wall against moisture.

vertical transportation An elevator, escalator, or lift.

vertical tray conveyors A vertical conveying system designed to carry trays or boxes.

vertical-vision-light door See **narrow-light door**.

very high output fluorescent lamp (VHO lamp) A rapid-start fluorescent lamp designed to operate on a very high current, providing a light flux per unit length of lamp higher than that obtained from a high output fluorescent lamp.

vestibule An anteroom or foyer leading to a larger space.

V-groove Any of several longitudinal cuts made on the faces of pieces of lumber or plywood. Edges are sometimes chamfered to create a "V" where pieces are placed edge to edge. A "V" may also be machined the length of the piece to provide decoration. A "V" pattern also may be used to form tongue and groove connections on hardwood or plywood.

V-gutter See **valley gutter**.

viaduct A bridge constructed in the form of several towers or piers that support arches. Usually made of steel or concrete.

vibrated concrete Concrete compacted by vibration during and after placing.

vibrating pile driver See **sonic pile driver**.

vibrating roller A towed or self-propelled roller with a motor-driven vibrating mechanism.

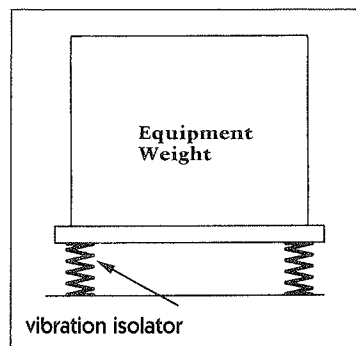
vibrating screed A machine designed to act as a vibrator while leveling freshly placed concrete.

vibration Energetic agitation of freshly mixed concrete during placement by mechanical devices, either pneumatic or electric, that create vibratory impulses of moderately high frequency that assist in evenly distributing and consolidating the concrete in the formwork.

vibration, external The process of attaching vibrating devices at strategic positions to concrete forms. Particularly applicable to the manufacture of precast items and for vibration of tunnel-lining forms. In the manufacture of concrete products, external vibration or impact may be applied to a casting table.

vibration, internal The process of inserting one or more vibrating elements into concrete at selected locations. Generally applicable to cast-in-place construction.

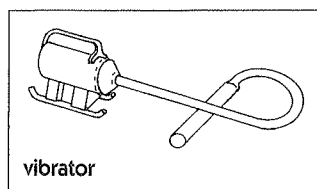
vibration isolator A flexible support for any form of vibrating or reverberating machinery, piping, or ductwork, serving to reduce the vibrations that are carried to the remainder of the building structure.



vibration limit That time at which fresh concrete has hardened sufficiently to prevent its becoming mobile when subjected to vibration.

vibration meter Any instrument that measures the displacement, velocity, or acceleration of a vibrating body.

vibrator An oscillating machine used to agitate fresh concrete so as to eliminate gross voids, including entrapped air, but not entrained air, and to produce intimate contact with form surfaces and between embedded materials.



vibratory hammer A pile-driving hammer normally weighing from three to five tons, that with rapid vibrations causes the soil around the pile to change to a liquid state. The weight of the hammer then slips the pile down through the soil.

vibratory plate A piece of construction machinery used to compact soil, pavement underlayment materials, or pavement.

vibroflotation A process used to stabilize and otherwise improve soil for building by compacting loose granular soils.

vicat apparatus A penetration device used in the testing of hydraulic cements and similar materials.

vicat needle A weighted needle for determining the setting time of hydraulic cements.

vice See vis.

victaulic pipe Pipe with fittings that allow for movement along joints while remaining watertight.

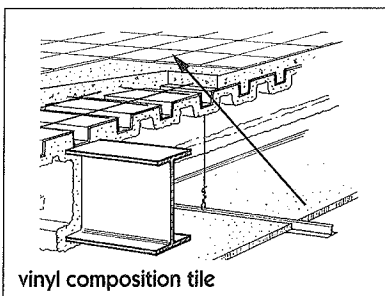
view sash A picture window with panes of glass divided by muntins.

vinyl A thermoplastic compound made from polymerized vinyl chloride, vinylidene chloride, or vinyl acetate. Vinyl is typically tough, flexible, and shiny.

vinyl-asbestos tile A resilient, semiflexible floor tile, composed of ground limestone, plasticizers, pigments, polyvinyl chloride binder, and asbestos fiber reinforcing. This product has been replaced by vinyl composition tile.

vinyl-clad Doors and windows that have a vinyl covering applied over all exposed surfaces that make up the frame and jamb.

vinyl composition tile A floor tile similar to vinyl-asbestos floor tile except the asbestos has been replaced by glass fiber reinforcing.



vinyl overlay An overlay applied to panel products and moldings and usually printed with a color and grain, needing no further finishing.

vinyl siding Building siding most often consisting of rigid polyvinyl chloride (PVC) used to cover exterior walls.

vinyl tile A floor tile similar to vinyl-asbestos floor tile, but which does not contain mineral or other fibers.

virgin growth lumber Wood products harvested from mature trees, with attributes such as a tighter grain, superior hardness, dimensional stability, and durability.

Virginia pine *Pinus virginiana*. This is another minor member of the southern yellow pine group. It is grouped for grading purposes with "pond pine," under the stamp "mixed pine species."

vis (vice, vise) **1.** A spiral staircase, generally of stone, with steps winding around a central shaft. **2.** A screw stair.

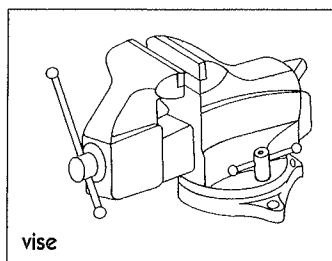
viscometer Instrument for determining viscosity of slurries, mortars, or concretes.

viscosity The degree to which a fluid resists flow under an applied force.

viscous filter An air-cleaning filter that employs a surface covered with viscous oil or fluid, to which dirt particles and other airborne impurities cling as the air passes through.

vise **1.** A gripping tool with adjustable jaws controlled by a lever or screw, used to clamp an object firmly in place while work is being done on it.

2. A vis.



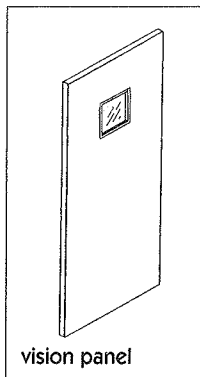
V

Vise Grips® See locking pliers.

visible light transmission (or transmittance) The percentage of total visible light that passes through a window or similar glazed opening.

visible transmittance (VT) A window rating that includes the amount of visible light that is transmitted. VT ranges between 0 and 1, and the higher rating indicates more light transmitted.

vision panel Glazed opening installed in a door as specified by plans and specifications.



visqueen Plastic sheeting, typically 4 mil or 6 mil in thickness.

visual comfort probability (VCP)

A system that evaluates the visual comfort of a lighting system by rating its direct discomfort glare.

visual concrete See exposed aggregate.

visual inspection An inspection made without the use of instruments.

visual task The plane at which work is done, and all associated details and objects. Used to measure and specify illuminance.

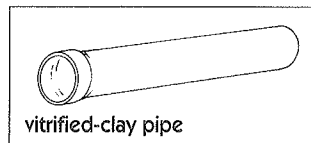
vitreous In describing glazed products, a degree of impermeability in a material characterized by low water absorption. Vitreous is less than 3% absorption in floor and wall tile and low voltage electrical porcelain, and less than 0.3% absorption in other materials.

vitreous china Material with a glass-like finish used for plumbing fixtures.

vitricification **1.** A process of melting soil or wastes to a liquid form, and then cooling the liquid to a hard, glass-like material. **2.** The fusion of grains in clay products under high kiln temperatures, resulting in closure of pores and an impervious material. **3.** A process that transforms the chemical and physical characteristics of hazardous waste so that the treated residues contain hazardous material immobilized in a vitreous mass.

vitricified brick Glazed brick that is impervious to moisture and highly resistant to chemical corrosion.

vitricified-clay pipe Glazed earthenware pipe favored for use in sewage and drainage systems because it is impervious to water and resistant to chemical corrosion.



void-cement ratio Volumetric ratio of air plus net mixing water to cement in a concrete or mortar mixture.

void ratio In a mass of granular material, the ratio of the volume of voids to the volume of solid particles.

voids The air spaces between particles in granular material such as sand, or a paste such as mortar.

void-solid ratio The ratio of the sum of the areas of window and door openings to the gross area of an exterior wall of a building.

volatile material **1.** Material that is subject to release as a gas or vapor. **2.** Liquids that evaporate readily.

volatile organic compounds (VOCs) Regulated compounds that lead to the formation of ozone and smog and

may be hazardous to humans. VOCs contain carbon molecules and are volatile enough to evaporate from material surfaces into indoor air at normal temperatures. They are emitted on a large scale from automotive and industrial sources.

volatility The tendency of a substance to vaporize, or "escape," from the liquid phase or from the surface of a solid to the vapor phase.

volt The unit of voltage or potential difference equal to the voltage between two points of a conducting wire carrying a constant current of one ampere, when the power dissipated between the points is one watt.

voltage A measurement of electrical potential for a building's circuits.

voltage control Device that maintains a constant, uniform voltage in electrical circuits.

voltage drop The difference in voltage between any two points in an electric circuit.

voltage, nominal A value assigned to a circuit or system for classification purposes. Operation may actually be possible within a range, and the nominal voltage is often the midpoint of that range.

voltage regulator A control device within an electrical system that automatically keeps the voltage supply constant despite variable line voltage at the point of input.

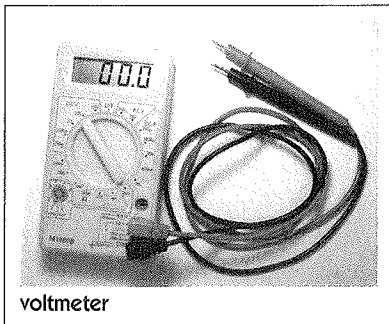
voltage relay A voltage monitoring device that detects changes in levels of current and controls the flow of electricity accordingly.

voltage-to-ground **1.** The voltage between a conductor in a grounded electric circuit and the point of the circuit that is grounded. **2.** The maximum voltage between a conductor in an ungrounded electric circuit and another conductor.

volt-ampere The product obtained by multiplying one volt times one ampere, equivalent to one watt in direct-

current circuits and to one unit of apparent power in alternating current circuits.

voltmeter An instrument used to measure the voltage drop between any two points in an electric circuit.



voltmeter

volume batching The measuring of the constituent materials for mortar or concrete by volume.

volume change An increase or decrease in volume. *See also* deformation.

volume damper Device installed in a duct system circuit to add resistance to the circuit for air volume balancing.

volume method (of estimating cost) A cost estimating method determined by multiplying an estimated cost per unit of volume by the volume of the building. *See also* architectural volume, architectural area of buildings, and area method.

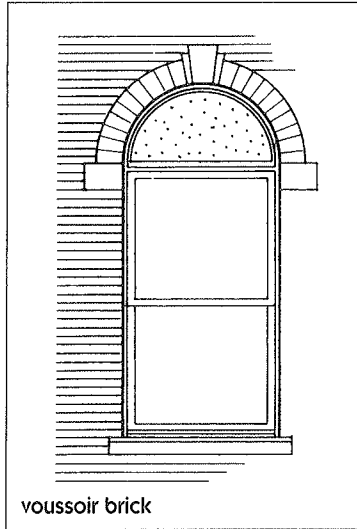
volumetric test **1.** A test to determine the integrity of an underground storage tank through review and comparison of tank volume. **2.** A test to determine the air content of fresh concrete.

volute **1.** The spiral-turned handrail detail at the first tread on some stairs. **2.** The spiral treatment that appears at the top of a column (usually Ionic).

vomitory An opening dividing a bank of seats to provide access to and egress from an aisle.

voussoir A wedge-shaped masonry unit in an arch or vault, the converging sides of which are cut along radii of the vault or arch.

voussoir brick *See* arch brick.



voussoir brick

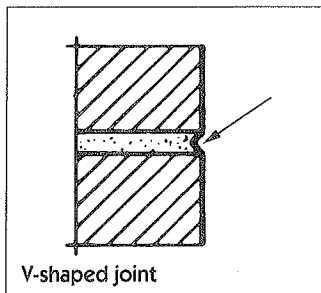
V-tool A gauge with a V-shaped cutting edge. *See also* parting tool.

V-tooled joint *See* V-shaped joint.

vulcanization A chemical process in which a rubber compound becomes less plastic, more resistant to swelling by organic liquids, and more elastic, and its elastic properties are extended over a greater temperature range.

V-shaped joint (V-joint, V-tooled joint)

1. A V-shaped horizontal joint in mortar, formed with a steel jointing tool, that serves to resist rainwater penetration. **2.** Two adjacent wood boards, with beveled or chamfered edges, that form a joint in the same plane.



V-shaped joint

W Abbreviations

The abbreviations listed below are commonly used in the construction industry.

w water, watt, weight, west, wicket, wide, width, wire, with, work	wrc western red cedar
W watt, west, western, width	wrt wrought
w/ with	WS weather strip
WA with average	wsct/wains wainscoting
WAF wiring around frame	wt, Wt weight
WB welded base, water ballast, waybill	WT water table, watertight
WBT wet-bulb temperature	ww white wash, white woods
WC water closet	WWM welded wire mesh
WCLIB West Coast Lumber Inspection Bureau	WWPA Western Wood Products Association
wd wood, window	
Wdr wider	
WF wide flange, white fir	
wfl waffle	
wg wing, wire gauge	
wh watt-hour	
WH water heater	
WHP water horsepower	
whr watt-hour	
whse, WHSE warehouse	
WI wrought iron	
WK week, work	
wm wattmeter	
WM wire mesh	
W/M weight or measurement	
w/o water-in-oil, without	
WP waterproof, weatherproof, white phosphorus	
wpc watts per candle	
w proof waterproofing	

W Definitions

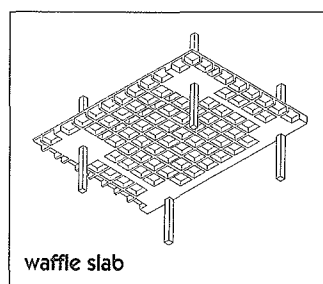
wall bracket

waferboard A panel product made of discrete wafers of wood bound together by resin, heat, and pressure. Waferboard can be made of timber species, such as aspen, that are not suitable for lumber or plywood manufacture.

waffle See dome.

waffle floor See waffle slab.

waffle slab A reinforced concrete slab with equally spaced ribs parallel to the sides, having a waffle appearance from below.



wage rate Hourly rate of pay on which an employee's paycheck is calculated, agreed upon between the employer and employee.

Wagner fineness The fineness of Portland cement, expressed as total surface area in square centimeters per gram, determined by the Wagner turbidimeter apparatus and procedure.

wagon drill A movable rig for positioning and holding a pneumatic drill, consisting of a mast with a carrier for the drill and a supporting wheeled carriage.

wagon-head dormer A dormer with a semicircular roof.

wainscot The lower portion of an interior wall whose surface differs from that of the upper wall.

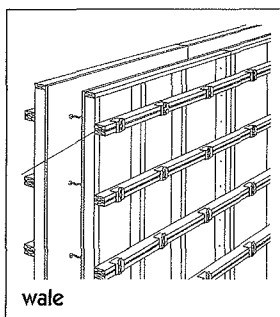
wainscot cap The finish molding at the top of wainscot.

wainscot oak Selected oak planks used in wainscoting.

waist The narrowest section of a column or similar building element.

waiver of lien An instrument by which a person or organization, who has or may have a right of mechanic's lien against the property of another, relinquishes such a right. See also **mechanic's lien and release of lien**.

wale (waler, whaler) **1.** Timber placed horizontally across a structure to strengthen it. **2.** Horizontal bracing used to stiffen concrete form construction and to hold studs in place.



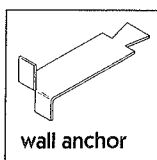
walk A paved or planked path for foot traffic.

walk-in box A refrigerator or freezer large enough for one or more persons to enter to deposit or retrieve food.

walking edger A concrete finishing tool mounted on a long handle and used to produce a radius at the edge of a concrete slab.

wall A vertical element used primarily to enclose or separate spaces.

wall anchor A steel strap used to attach a back-up surface to the masonry fascia.



wall arcade A blind arcade used as an ornamental dressing to a wall.

wall base See base.

wall beam **1.** A special form of reinforced concrete framing, used for some apartment buildings, in which walls between apartments are used as deep, transverse beams supporting one edge of a floor slab below and one above. The deep beams alternate between floors and between columns. **2.** A header bolted to a wall and used to support joists or beams.

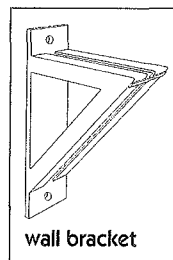
wall-bearing construction A structural system where the weight of the floors and roof are carried directly by the masonry walls rather than the structural framing system.

wall-bearing partition See load-bearing partition.

wallboard A manufactured sheet material used to cover large areas. Wallboards are made from many items, including wood fibers and gypsum. In North America, the most common is Sheetrock®, a gypsum-based panel bound by sheets of heavy paper. It is used to cover interior walls and ceilings in place of wet plaster.

wall box (beam box, wall frame) **1.** A bracket fixed to a wall to support a structural member. **2.** A metal box set in a wall to house an electric switch or receptacle.

wall bracket A bracket fastened to a wall and used to support a structural member, pipe, an electric insulator, an electric fixture, or a section of scaffolding.



wall chase

W

wall chase See chase.

wall clamp A brace or tie used to connect two parallel walls to each other.

wall column A steel or concrete column fully or partly embedded in a wall. See also pilaster.

wall coping See coping.

wall covering Any material or assembly used as a wall finish and not an integral part of the wall.

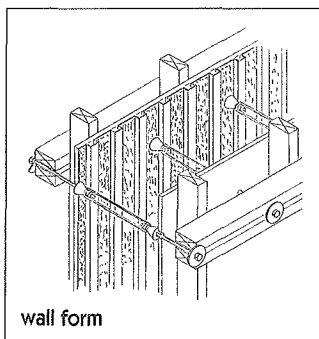
wall crane A crane with a horizontal arm supported from a wall or columns of a building. The arm may support a trolley.

wall expansion A break designed into a wall to allow room for building materials to expand and contract with thermal conditions.

wall fabric Any wall covering used to finish a wall, whether wallpaper or an actual fabric.

wall footing A strip of reinforced concrete that is wider than the wall it supports and thus distributes the wall load over a wider area.

wall form A retainer or mold erected to give the necessary shape, support, and finish to a concrete wall.



wall furring Strips of wood or shaped sheet metal attached to a rough wall to provide a plane on which lath and plaster, paneling, or wainscoting may be installed.

wall grille A perforated plate, casting, punched sheet, or frame used to

conceal an opening, radiator, or the like, while allowing a passage for air.

wall guard A protective, resilient strip attached to a wall to protect the surface from carts, transporters, or other movable conveyors.

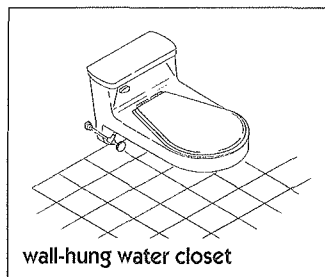
wall handrail A rail attached to a wall at a flight of stairs and running parallel with the slope of the stairs for use as a handrail.

wall hanger A stirrup or bracket fixed to a wall and used to support one end of a horizontal member.

wall height The vertical distance from the top of a wall to its support, such as a foundation or support beam.

wall hook 1. A special large nail or hook used as a beam anchor or used on a beam plate. 2. A hook or bracket fixed in a masonry wall to hold downspouts, lightning rods, etc.

wall-hung water closet A water closet mounted on a wall so the area beneath is clear for cleaning.



wall opening An opening at least 30" high and 18" wide in any wall or partition through which persons may fall, such as a chute opening.

wall outlet An electric outlet mounted in a wall with a decorative cover.

wallpaper Decorative wall covering generally applied over gypsum board or plaster made up of sheets of paper, fabric, vinyl, or paper-like material affixed to interior walls or ceilings. Wallpaper is either prepastored or applied using a brush-on paste product.

wall plate The top plate in construction, placed on top of studs and bearing the joists of the next floor above.

wall plug See plug and wall outlet.

wall post A post next to, and often fastened to, a wall.

wall puller A simple hand tool used to help position a stud wall or similar construction.

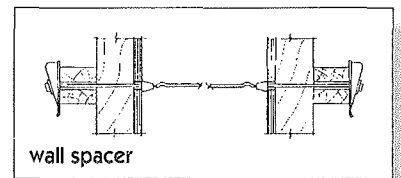
wall rib A longitudinal rib against an exterior wall of a vaulting compartment.

wall shaft A small column, supported on a corbel or bracket that appears to support a rib of a vault.

wall sign 1. A sign mounted on, or fastened to, a wall. 2. A sign attached to the exterior wall of a building and projecting not more than a code-defined distance.

wall socket See wall outlet.

wall spacer A metal tie used to hold forms in position until concrete has set.



wall tie A metal strip or wire used to tie masonry wythes together, or tie a masonry veneer to a wood or concrete frame or wall. See also wythe.

wall tile A glazed tile used in a wall facing.

wall-wash luminaire A luminaire located adjacent to or on a wall with most of its light directed onto the wall.

walnut (English walnut, black walnut, butternut) *Juglans regia*, *J. nigra*, and *J. cinerea* respectively. The last two, native to North America, are used for veneer and furniture stock, in addition to their edible nuts.

Walter pine See spruce pine.

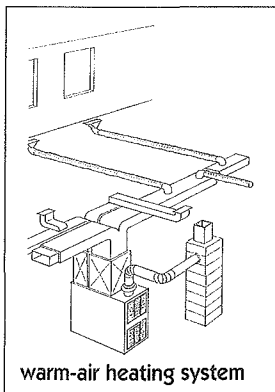
wane A defective edge of a board due to remaining bark or a beveled end. A wane is usually caused by sawing too near the surface of the log.

ward **1.** A baffle in a lock to prevent use of an unauthorized key. **2.** A division of a hospital or jail.

warehouse set The partial hydration of cement stored for a time and exposed to atmospheric moisture, or mechanical compaction occurring during storage. A partially hardened, unopened bag of cement.

warm-air furnace A furnace that generates warm air for a heating system.

warm-air heating system A heating system in which warm air is distributed through a single register or series of ducts. Circulation may be by convection (gravity system) or by a fan in the ductwork (forced system).



warm-in-winter side The side of a wall that faces the living area of a structure. When installing insulation with a vapor barrier, the barrier should face the warm-in-winter side.

warning pipe An overflow pipe with an outlet located so that discharge can be readily observed.

warp Distortion in the shape of a plane surface, such as that in lumber as a result of a change in moisture content.

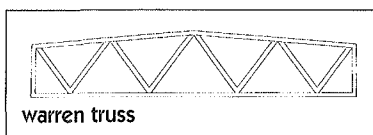
warping A deviation of a slab or wall surface from its original shape, caused by temperature and/or moisture differentials within the slab or wall. See also *curling*.

warping joint A longitudinal or transverse joint, with bonded steel or tie bars passing through it, with the sole function of permitting warping of pavement slabs when moisture and temperature differentials occur in the pavement.

warranty A promise made by a seller or contractor responsible for work performed under a contract that the work performed is fit for the purpose intended and is free from structural, electrical, mechanical, and other defects.

warranty deed A deed conveying real property, in which the grantor makes binding representations concerning the quality of his title and its freedom from encumbrances.

warren truss (warren girder) A truss consisting of horizontal top and bottom chords, separated by sloping members, and without vertical pieces.



wash **1.** The top surface of a building element, such as a coping or sill, intended to shed water. **2.** A manner of applying water colors to a rendering.

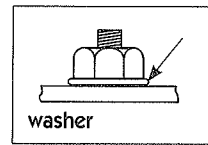
washable Descriptive of a material that may be washed repeatedly without a noticeable deterioration in appearance or function.

wash boring A boring made in the earth by a rotary drill that uses water to stabilize the sides of the hole.

wash coat A thin, almost transparent coat of paint applied to a surface as a sealer or stain.

wash cut A beveled cut in a stone windowsill that diverts water away from the window and the structure.

washer **1.** A flat ring of rubber, plastic, or fibrous material, used as a seal in a faucet or valve or to minimize leakage, as in a threaded connection. **2.** A flat ring of steel that may be split, toothed, or embossed; used in threaded connections to distribute loads, span large openings, relieve friction, or prevent loosening.



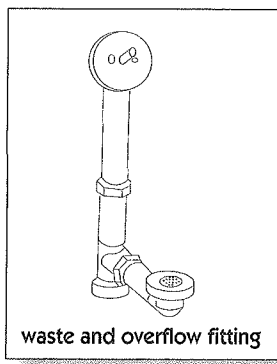
Washington fir See *Douglas fir*.

wash primer Any thin paint that promotes adhesion of the subsequent coat.

wash water (flush water) Water carried on a truck mixer in a special tank for flushing the interior of the mixer after discharge of the concrete.

waste The difference between the quantity that must be included in an estimate and the quantity that is actually to be installed, added to the quantity as a percentage. Applicable to materials, waste should not be applied to labor or confused with productivity.

waste and overflow fitting A common bathtub fixture that provides one outlet for a tub drain and another in case water rises above a safe level.



waste-disposal unit

W

waste-disposal unit An electrically operated device for grinding waste food and disposing of it through the plumbing drainage pipes.

waste heat boiler A boiler that is fired by the hot exhaust gases of incinerators, engines, or industrial processes.

waste heat recovery An economical measure that involves capturing the heat produced by a process in a cyclic process to serve another need, such as pre-heating combustion air.

waste management Activities undertaken to minimize, contain, control, store, transport, treat, or dispose of waste material.

waste oil Lubricants, typically automotive lubricants, that are no longer usable for their intended purpose.

waste pile An accumulation of solid waste materials at a specific location.

waste pipe A pipe to convey discharge from plumbing pipes.

waste plug A tapered, rubber-like object used to close the drain of a wash basin or tub.

waster A slang term for a brick with surface imperfections that leave it suitable to be used only as a backing brick.

waste stream A continuously or regularly generated quantity of waste materials from a particular facility, process, or activity.

waste-to-energy Conversion of waste products to energy (steam, heat, or electricity) by incineration.

wastewater Water that has been used in a process and contains contaminants.

wasting (dabbing) Splitting of excess stone with a hand tool so that the resulting surfaces of block are nearly flat.

water-absorption The amount of water absorbed by a material under specified test conditions. Commonly expressed as a weight percent of the test specimen.

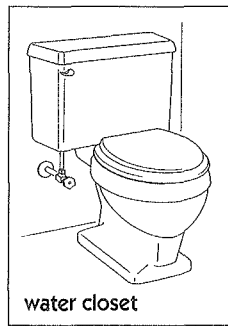
water analysis Chemical and bacteriological analysis of water.

water bar (weather bar) A wood or metal strip fixed to the exterior sill of a window or door to resist the penetration of water.

waterborne preservative Preservative salts dissolved in water and transferred to the wood during the treating process.

water-cement ratio The ratio of the amount of water, exclusive only of that absorbed by the aggregates, to the amount of cement in a concrete or mortar mixture. The ratio is preferably stated as a decimal by weight.

water closet (WC, flushable closet, toilet) **1.** A plumbing fixture used to receive human wastes and flush them to a waste pipe. **2.** A room that contains a water closet.



water content See moisture content.

water cooling tower See cooling tower.

water crack A fine crack in a coat of plaster, caused by applying a coat over a previous coat that had not dried sufficiently or by using plaster with a water content that is too high.

water efficiency Products or fixtures, such as low-flow toilets and faucets, that use less water than traditional products while still sustaining the same performance.

water gain See bleeding.

water gauge A manometer filled with water.

water-gel explosive A wide variety of explosives, all containing water and ammonium nitrate, used for blasting. The explosives are sensitized with an explosive, such as TNT or smokeless powder, with metals such as aluminum, or with other fuels. They may be premixed at a plant or site-mixed immediately prior to loading in a blast hole.

water hammer **1.** A loud thumping noise in a water service line due to the surge of suddenly checked water. **2.** A banging in steam lines occurring at the time of steam flow. The steam, traveling at high velocity picks up drops of condensed water and slams them against the piping at a bend.

water joint See saddle joint (**2.**).

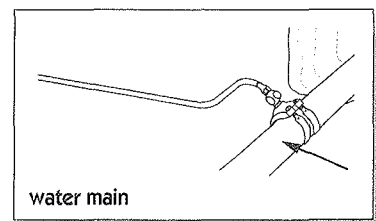
water level A simple device used to see that surfaces are level. Most often a long (up to 50-foot), thin plastic tube filled with water.

water-level control A control on a boiler used to maintain the water at a safe level.

water lime A hydraulic lime or cement that will set under water.

waterline The highest water level in a cistern or flush tank to which the shut-off should be adjusted.

water main A main supply pipe in a water system providing water for public or community use.



water outlet **1.** Any opening or end of pipe used to discharge water to a plumbing fixture, boiler, or other device. **2.** An opening through which water is discharged to the atmosphere.

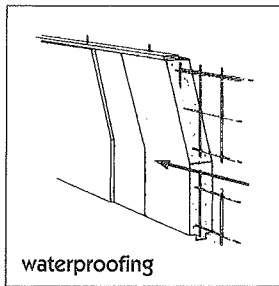
waterproof Any material, treatment, or construction that resists flow or penetration of water.

waterproof adhesive An adhesive that, when properly cured, is not affected by water.

“waterproofed” cement

Cement interground with a water-repellent material, such as calcium stearate. *See also* **hydraulic cement**.

waterproofing Any of a number of materials applied to various surfaces, e.g., a building foundation, to prevent the infiltration of water.



waterproof paper A paper made water-impervious by adding a resin during the manufacturing process.

water reactive A substance that generates heat or gas in the presence of water.

water-reducing agent A material that either increases workability of freshly mixed mortar or concrete without increasing water content, or maintains workability with a reduced amount of water; the effect being due to factors other than air entrainment.

water-repellent cement A hydraulic cement having a water-repellent agent added during the process of manufacture, with the intention of resisting the absorption of water by the concrete or mortar.

water-repellent paper Gypsum board paper surfacing that has been formulated or treated to resist water penetration.

water retentivity The property of mortar that prevents rapid loss of mix water by absorption.

water rights **1.** The right of real property owners to make reasonable changes in the flow of water that is flooding their land. **2.** A legal right to use water of a natural stream or body of water for a general or specific purpose.

water ring A perforated manifold in the nozzle of dry-mix shotcrete equipment through which water is added to the materials.

water-saving toilet A toilet that uses significantly less water than older models, as low as 1.6 or 1.28 gallons per flush.

water seal The water in a trap acting as a seal against the passage of gases.

water seasoning The seasoning of lumber by soaking it in water for a period, usually two weeks, and air drying it.

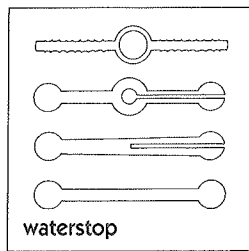
water-service pipe The part of a water-service main owned by the water department.

watershed The area of land that drains naturally into a stream or complex of streams. The management of watersheds in the national forests is a principal function of the Forest Service.

water softener A device to remove calcium and magnesium salts from a water supply, usually by ion exchange.

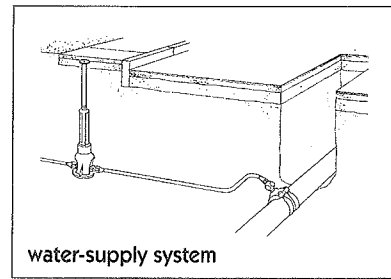
water stone A synthetic sharpening stone used with water to hone tool blades. Water keeps the accumulation of metal residue from the blades to a minimum.

waterstop A thin sheet of metal, rubber, plastic, or other material inserted across a joint to obstruct the seeping of water through the joint.



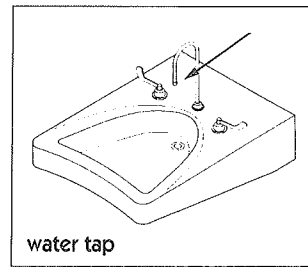
water-supply stub A vertical supply pipe that supplies fixtures and that reaches less than one story in height.

water-supply system **1.** The system that supplies water throughout a building, including the service pipe(s), distribution and connecting pipes, fittings, and control valves. **2.** The system that supplies water to units in a community, including reservoirs, tunnels, and pipelines.



water table **1.** The top surface of groundwater. **2.** A horizontal, sloped ledge on an exterior wall with a drip molding to prevent water from running down the outside of the wall below.

water tap (faucet) An outlet valve for water.



watertight A joint, enclosure, or assembly that is designed to prohibit the entry of water.

water tube boiler A boiler in which water circulates through the tubes, while combustion gases surround the tubes.

water vapor diffusion The movement of water vapor through permeable materials to areas of different water vapor pressure.

water vapor transmission

W

water vapor transmission The rate of water vapor flow, under steady specified conditions, through a unit area of a material, between its two parallel surfaces. Metric unit of measurement is $1 \text{ g}/24 \text{ h} \cdot \text{m}^2 \cdot \text{mm Hg}$. *See also* permeance.

watt A unit of power equal to the power dissipated in an electric circuit in which a potential difference of 1 volt causes a current flow of 1 ampere. The power required to do work at the rate of 1 joule per second.

watt-hour A unit of work equivalent to the power of 1 watt operating for 1 hour, which is equal to 3600 joules.

wattle A framework consisting of interwoven rods, poles, branches, etc.

wattmeter A calibrated instrument that measures electric power in watts.

wave front The surface of the wave sphere created when sound waves radiate from the source in all directions, forming a spherical shape.

wavelength The distance between two successive points in a sound or light wave that are characterized by the same phase of oscillation.

wax A material obtained from vegetable, mineral, and animal matter that is soluble in organic solvents, and solid at room temperature. Wax is applied in a liquid or paste form on wood and metal surfaces to provide gloss, and to protect the surface.

waxing The filling of cavities in a finished piece of marble with materials to match the stone in color and texture.

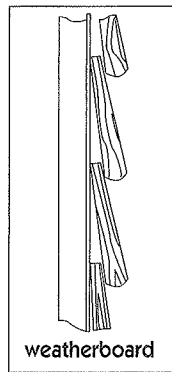
weakened-plane joint *See* groove joint.

wearing course A topping or surface treatment to increase the resistance of a concrete pavement or slab to abrasion.

weather **1.** The length of shingle or tile that is exposed, as measured along the slope of a roof. **2.** To deteriorate or discolor when exposed to the weather. **3.** To slope a surface for the purpose of shedding rainwater.

weatherability The ability of a masonry joint to resist deteriorating in relationship to how it is jointed-off.

weatherboard **1.** Boards or siding lapped to shed water. **2.** A projecting member attached to the bottom rail of an external door to divert water from the sill or threshold.



weathered **1.** Descriptive of a surface exposed long enough that distinct weathering has taken place. **2.** Having an upper surface that is sloped to shed water.

weathered joint *See* weather-struck joint.

weathering **1.** Changes in color, texture, strength, chemical composition, or other properties of a natural or artificial material due to the action of the weather. **2.** The mechanical or chemical disintegration and discoloration of the surface of wood, caused by exposure to light, the action of dust and sand carried by the wind, and the alternate shrinking and swelling of the surface fibers due to continual variation in temperature and moisture content brought on by changes in the weather.

weathering steel Any of several high-strength, low-carbon steel alloys that, when exposed to normal atmospheric conditions, form a thin, protective orange or brown patina that is four to eight times more corrosion-resistant than plain, low-carbon steels.

Weathering steel is not appropriate in environments where it would be exposed to extreme wetness.

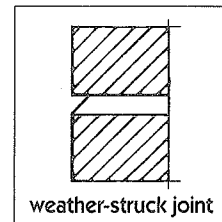
weatherometer A device that uses accelerated weathering techniques to analyze durability, weather-resistance, and other properties of a building material or coating.

weather resistance The ability of a material or coating to resist weathering. *See also* weathering (**1.**).

weatherseal channel A channel installed, flanges downward, on the top of an exterior door.

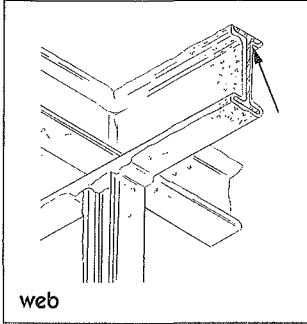
weatherstrip A strip of wood, metal, felt, plastic, or other material applied at an exterior door or window to seal or cover the joint made by the door or window with the sill, casings, or threshold.

weather-struck joint (weathered joint) A horizontal masonry joint sloped from a point inside the face of the wall to the face of the wall so the joint will shed water.



weaving **1.** The alternate lapping of shingles on opposite surfaces when two adjacent roofs intersect. **2.** The process of making a rug by interlacing surface and backing yarns.

web **1.** That part of a beam or truss between the flanges or chords, used mainly in resisting shear stresses. **2.** The walls connecting the face shells of a hollow concrete masonry unit.



web bar See web reinforcement.

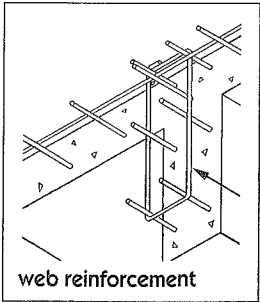
web clamp A device consisting of a fabric tape with a fastener that is secured with a wrench or screwdriver, used to hold carpentry work while gluing.

web crippling Local failure of the web of a structural member caused by a concentrated load.

web member In a truss, a secondary structural member that joins the top and bottom chords.

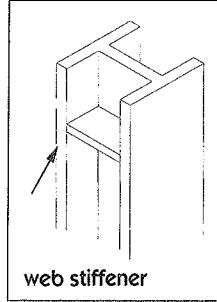
web plate A steel plate forming the web of a built-up girder truss, or beam.

web reinforcement Reinforcement placed in a concrete member to resist shear and diagonal tension.



web splice A splice joining two web plates.

web stiffener 1. A vertical steel shape attached to the web of a structural member and used to prevent web buckling. 2. Blocking added to the web of a composite wood structural member to prevent web buckling.



wedge A piece of wood or metal tapering to a thin edge, used to adjust elevation or tighten formwork.

wedge anchor A wedging device used in the anchorage of a tendon in posttensioned, prestressed concrete.

weep cut A groove cut in the underside of a horizontal board or masonry unit that extends from an exterior wall to keep water from moving back toward the wall.

weep hole (weeps) 1. A small hole in a wall or window member to allow accumulated water to drain. The water may be from condensation and/or surface penetration. 2. A small hole in a retaining wall located near the lower ground surface. The hole drains the soil behind the wall and prevents build-up of water pressure on the wall.

weeping pine (Himalayan pine) *Pinus exelsa*. A species of pine with long, drooping needles.

weight batching Measuring the constituent materials for mortar or concrete by weight.

weight box The channel in a window frame housing the sash weights.

weighted average An average in which certain entries, usually at the extremes of the range of values, are manipulated so a number is obtained that is believed to be more representative of the true mean than that obtained by straight averaging.

weir A structure across a ditch or stream used for measuring, or for diverting the flow of water.

weir head The depth of water above the top of a flat weir, or above the bottom of a notch in a notched weir.

weld 1. To build up or fasten together, as with cements or solvents. 2. To fasten two pieces of metal together by heating them until there is a fusing of material, either with or without a filler metal.

weld decay Local corrosion at or adjacent to a weld.

welded butt splice A reinforcing bar splice made by welding the butted ends.

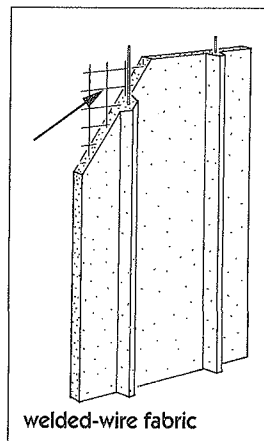
welded cover plate A cover plate welded to the flange of a structural member, usually to increase strength in the middle length of a span.

welded joint A joint connecting two metal parts by welding.

welded reinforcement Concrete-reinforcing steel joined by welding, and most often used in columns to extend vertical bars.

welded truss A truss of metal members in which the joints are made by welding.

welded-wire fabric (welded-wire mesh) A series of longitudinal and transverse wires of various gauges, arranged at right angles to each other and welded at all points of intersection; used for concrete slab reinforcement.



welded-wire fabric reinforcement

W

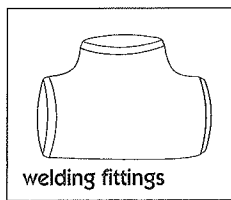
welded-wire fabric reinforcement

Welded-wire fabric in either sheets or rolls, used to reinforce concrete.

welded wire lath See wire lath.

welding cables The pair of cables supplying electric energy for use in welding. One lead connects a welding machine with an electrode; the other lead connects the machine with the work.

welding fittings Wrought steel elbows, tees, reducers, saddles, and the like, beveled for butt welding to pipe. Forged fittings with hubs or with ends counter-bored for fillet welding to pipe; they are used for small pipe sizes and high pressures.



welding neck flange A flange with a long neck that is beveled for butt-welding to pipe.

welding nozzle A stub-pipe that is shop-welded to a vessel to facilitate welding a connecting pipe in the field.

welding rectifier Equipment used in arc welding to convert AC power to DC power.

welding rod Filler metal in the form of wire or rod used in gas welding and brazing and in some arc welding processes.

welding screw A screw with lugs or weld projections on the top or underside of the head to facilitate attaching the screw to a metal part by resistance welding.

weldment Any assembly made by welding parts together.

weld metal That part of a weld that was melted while welding.

weld nut A nut designed to be attached to a part by resistance welding.

well (wellhole) **1.** Any enclosed space of considerable height, such as an air shaft or the space around which a stair winds. **2.** A correction device for ground water. **3.** A wall around a tree trunk to hold back soil. **4.** A slot in a machine or device into which a part fits.

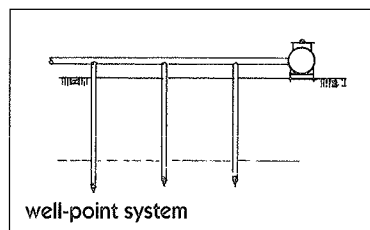
well drill A rotary drill mounted on a truck and used to drill for water.

well-graded aggregate Aggregate with a particle-size distribution producing maximum density, or minimum void space.

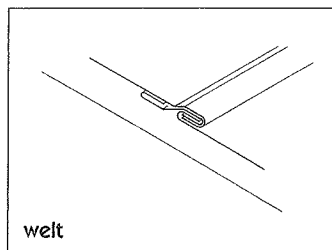
wellhold See well (1.).

well point A perforated pipe surrounded by pervious soil to permit the pumping of ground water.

well-point system A series of well points connected to a header and used to drain an area or to control ground water seepage into an excavation.



welt **1.** A seam in sheet metal, formed by folding over the edges of two sheets, interlocking the folded portions, and flattening the formed seam. **2.** A strip of wood fastened over a seam, joint, or shaped piece fastened over an angle for reinforcing.



welting strip A strip of sheet metal at the intersection of the roof and a vertical surface. One edge of the strip is fastened to the roof, and the other edge is bent to lock with the lower edge of a vertical sheet.

West Coast hemlock See hemlock.

West Coast Lumber Inspection Bureau (WCLIB) One of seven regional grading agencies in North America that is authorized to write and publish grading rules for lumber. See also grade stamp.

western framing See platform framing.

western larch See larch.

western pine Any of several pines growing in the western United States or Canada, including ponderosa, sugar, and western (Idaho) white pine.

western red cedar *Thuja plicata*. This species is found principally along the western edges of British Columbia, Washington, and Oregon. The wood is soft, straight-grained, and extremely resistant to decay and insect damage. It is used extensively in roof coverings, exterior sidings, fences, decks, and other outdoor applications.

western SPF Lumber of the spruce-pine-fir group produced in British Columbia or Alberta. See also spruce-pine-fir.

western spruce (Sitka spruce) See spruce.

western tamarack See larch.

western white pine (Idaho white pine) *Pinus monticola*. A species of pine found in a wide range throughout the western U.S. and British Columbia. It is easily worked, and is favored for shelving, cabinets, and a variety of specialized uses.

Western Wood Products Association One of seven regional grading agencies in North America that are authorized to write and publish grading rules for lumber. See also grade stamp.

western yellow pine See **ponderosa pine**.

westside **1.** An unofficial division of the southern yellow pine-producing region, located west of the Mississippi-Alabama state line, and including southwestern Alabama. Products from this region are most often marketed in the central southern states and the midwest. **2.** The area west of the Cascade Mountains in Oregon and Washington, as contrasted with the east side or pine country.

West Virginia spruce See **red spruce**.

wet bulb A thermometer utilizing evaporation of moisture from a water-saturated cloth on its bulb to measure temperature.

wet-bulb depression The difference between dry-bulb and the wet-bulb temperatures.

wet-bulb temperature **1.** The reading on a thermometer whose bulb is enclosed in a layer of wet fabric. **2.** The ambient temperature of an object cooled by evaporation.

wet-bulb thermometer A thermometer in which the bulb is enclosed in a layer of wet fabric.

wet cleaning The use of water-dampened cloths, mops, and other tools to eliminate asbestos contamination from an area or an object. The asbestos-contaminated cloths and mops are then either decontaminated or disposed of properly.

wet construction Any construction using materials that are placed or applied in other than a dry condition, as in concreting or plastering.

wet galvanizing The practice of galvanizing steel for protection by immersing it in molten zinc.

wet glazing Sealing glass in a frame using a glazing compound or sealant applied with a blade or gun.

wet mix Concrete containing too much water, immediately evidenced by a runny consistency.

wet-mix shotcrete Shotcrete in which all ingredients, including mixing water, are mixed before introduction into the delivery hose. The shotcrete may be pneumatically conveyed or moved by displacement. See also **pneumatic feed** and **positive displacement**.

wet-on-wet painting A procedure of spraying a coat of paint over a first coat that is not completely dry.

wet process In the manufacture of cement, the process in which the raw materials are ground, blended, mixed, and pumped while mixed with water. The wet process is chosen where raw materials are extremely wet and sticky, making drying before crushing and grinding difficult.

wet process hardboard Hardboard manufactured by a process in which a wood slurry is combined with a resin binder, and is then dried, first on a screen and later under pressure. The pressure imparts high density to the board and also sets the binder.

wet rot Decay of wood, in the presence of moisture and warmth, as a result of attack by fungi.

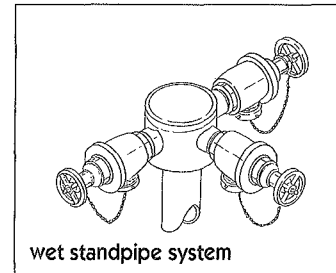
wet sanding Applying an abrasive to a surface while one or both are wet. Wet finishing reduces dust and keeps sanding machinery cleaner.

wet screeds Concrete strips placed beforehand at the proper elevation to act as height guides when pouring a concrete slab.

wet screening Screening to remove from fresh concrete any aggregate particles larger than a certain size.

wet sieving Use of water during sieving of a material on a No. 200 or (even finer) No. 325 sieve.

wet standpipe system A standpipe system filled with water at design pressure, ready for immediate use.



wet strength The measured strength of an adhesive joint after it has been submerged in a liquid.

wettability The degree to which a surface will absorb a liquid poured upon it.

wettest stable consistency The condition of maximum water content at which cement grout or mortar will adhere to a vertical surface without sloughing.

wetting **1.** The soaking of asbestos materials to diminish the level of air contamination they give off when disturbed. The water is mixed with saturants and surfactants before it is applied to the asbestos. **2.** Coating a base metal with filler metal prior to soldering or brazing. See also **tinning**.

wetting agent A substance capable of lowering the surface tension of liquids, facilitating the wetting of solid surfaces and permitting the penetration of liquids into the capillaries.

wet-use adhesive Adhesives used in glue-laminated timber that will perform satisfactorily under a wide variety of uses, as well as exposure to weather and dry atmosphere.

wet vent A vent that receives the discharge of wastes other than those from water closets.

wet wall A plaster or stucco wall that sets up as the material dries.

whaler See **wale**.

wheelabrator The application of steel abrasives in the form of grit or shot to clean a surface.

wheelbarrow

W

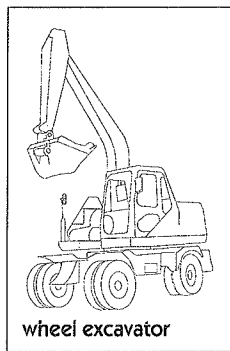
wheelbarrow A hand cart with one wheel in front plus two legs and two handles in back; used to move materials short distances.

wheel ditcher A trench digger consisting of a vehicle equipped with a large wheel on which buckets are mounted.

wheel dresser A hand tool used to clean or reshape the surface of a grinding wheel.

wheel excavator (continuous excavator)

1. A self-propelled unit for excavating a bank with buckets mounted on wheels. The earth is deposited on a conveyor belt for loading up hauling units. 2. Any power-driven machine used in excavation that moves on wheels, rather than crawlers.

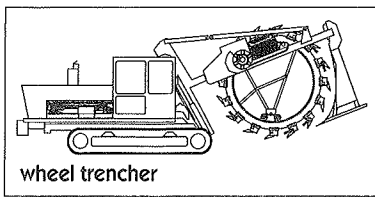


wheel excavator

wheel load The portion of the gross weight of a loaded vehicle transferred to a supporting structure under a given wheel of the vehicle.

wheel loader See wheel excavator (1.).

wheel trencher A trencher using a rotating wheel made of two ring plates with buckets every 20° to 30° around the circumference.



wheel trencher

whetstone A piece of natural or manufactured abrasive stone used to sharpen cutting tools.

whip A slang term that describes the vertical movement of improperly secured underlayment.

white balsam See white fir.

white cedar See Port Orford cedar.

white coat (finish coat) A lime-putty plaster coat with a troweled finish.

white fir (inland hemlock-fir)

Abies concolor. The most important of the true firs, this species is found in a wide range in the western U.S. Northern California accounts for the majority of white fir lumber produced in the U.S. The wood is fine-textured and relatively light. It is used in general construction and for such special uses as moldings and doors.

white hemlock See eastern hemlock.

white lauau See Philippine mahogany.

white lead Basic lead carbonate, white in color; used as a pigment in exterior paints, ceramics, and putty.

white mahogany See avodire.

white oak Any of several species of American oaks, principally *Quercus alba*, whose wood is more white than red.

white pine (northern white pine, Idaho white pine, sugar pine) *Pinus strobus*, *P. monticola*, and *P. lambertiana*, respectively.

white Portland cement Portland cement made from materials with low iron content, used to produce concrete or mortar that is white in color.

whiteprint A reproduction of a drawing or other document that is a positive image of the original; a reproduction produced by the exposure of light to paper treated with a diazo compound developed in ammonia fumes.

white roof systems Roofing systems that reflect heat and have proven to reduce the net cooling requirements of a facility by as much as 20%.

white rot A type of decay in wood caused by a fungus that leaves a white deposit.

white spruce *Picea glauca*. A species of spruce found predominantly in British Columbia and Alberta. It is marketed as part of the spruce-pine-fir group and is an important source of general construction lumber. It is also used extensively in pulp production.

white walnut See butternut.

whitewash Water added to quicklime or slaked lime, whiting, and glue and applied like paint, leaving a white coating.

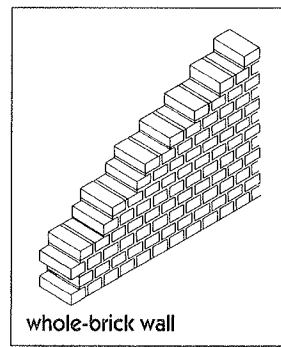
whitewood See tulipwood.

whiting Calcium carbonate pigment, used as an extender in paint, putty, and whitewash.

Whitney® punch One of a number of hand or power tools used to punch holes in metal.

Whitney strain diagram The assumed strain distribution of a reinforced concrete member in the yield state that is used in ultimate strength design.

whole-brick wall A brick wall having a thickness equal to the length of one brick.



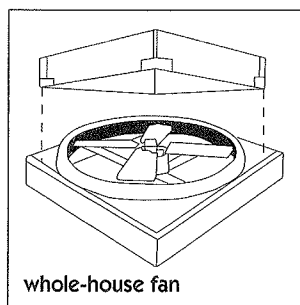
whole-brick wall

whole-building Integration of a building's systems to maximize sustainable and/or economic functioning by considering factors including use of energy and other resources, building materials, site preservation, and indoor air quality so that a structure can run at its maximum

efficiency; enhance user health, comfort, and productivity; and have the least impact on the environment.

whole design solution A design approach that considers and integrates all building systems, starting with the early design stages—for optimum efficiency and sustainability in the structure. Also holistic, integrated or whole building design.

whole-house fan A fan (typically centrally located in the attic ceiling of a house) that draws fresh outside air into the living space, flushes hot air up to the attic, and exhausts it to the outside.

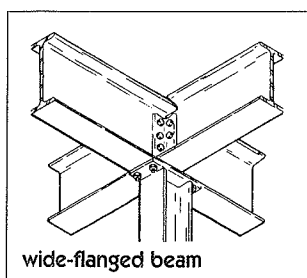


wholesale Selling to retailers rather than directly to consumers.

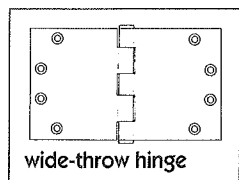
wicket A small door or gate, especially one that is mounted as part of a larger one.

wicking The tendency of water or any liquid to rise above an established level to saturate a porous solid.

wide-flanged beam A hot-rolled steel beam having a cross section resembling an "H" and having wider flanges than an I-beam.



wide-throw hinge A rectangular hinge having extra-wide leaves.



widow's walk A narrow walkway on the roof of a house.

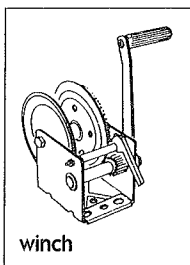
wigwam A sheet metal structure in the shape of a conical pyramid, used as a large incinerator.

wigwam burner A metal structure, shaped roughly like a Native American wigwam or tepee, in which mill wastes are burned. Although still used in some areas, such burners are being phased-out, partly because mill wastes are being utilized to a greater degree, and partly because the burners can be a major source of air pollution.

wildcat strike A strike called without authorization from the overseeing union or in spite of a no-strike clause in a collective bargaining agreement.

Williot diagram A graphical method used to determine deflections of trusses.

winch A stationary hoisting machine having a rotating drum around which a cable, rope, or chain is wrapped.



windage loss Water removed by circulating air, as in a cooling tower.

wind-brace A brace provided in a frame to support the frame against wind loads.

windbreak A dense growth of trees, fence, wall, etc., provided as protection against the wind.

wind column A vertical support to a wall system that is designed to help the system withstand wind loads.

wind drift The horizontal deflection of a structure as a result of wind.

wind electric system A single turbine, smaller than the utility-scale models, but much more efficient than the old-fashioned windmill, producing clean, affordable electricity for a rural home, farm, or business.

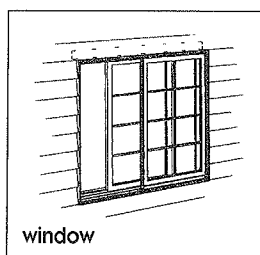
winder A tread that is used where a stair turns a horizontal angle, or in a spiral stair; shaped like a wedge or truncated wedge.

winding stair A stair constructed mostly of winders.

windlass A device for lifting heavy objects, usually consisting of a horizontal drum turned by a lever or crank. A cable runs from the object over a pulley to the drum where a cable is wound or unwound to move the object.

wind load The horizontal load used in the design of a structure to account for the effects of wind.

window 1. A normally glazed opening in an external wall to admit light and, in buildings without central air-conditioning, air. 2. An assembly consisting of a window frame, glazing, and necessary appurtenances. 3. A small opening in a wall, partition, or enclosure for transactions, such as a ticket window or information window.



window bead

W

window bead See inside stop, draft bead.

window board See window stool.

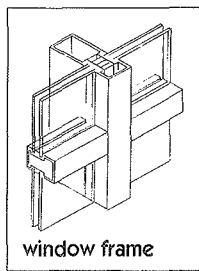
window box See weight box.

window catch A fastening device fixed to a window sash to secure it in the closed position.

window cleaner's anchor An anchor, fastened near a window on an outside wall of a multistory building, to which a person washing the window from the outside can attach a safety belt.

window cleaner's platform A platform suspended from a trolley on the roof of a multistory building used for outside window-washing and maintenance. The entire assembly is custom-made and may be either manually or mechanically operated.

window frame The fixed part of a window assembly attached to the wall and receiving the sash or casement and necessary hardware.



window glass (sheet glass) A soda-lime-silica glass made in continuous sheets of varying thickness and cut to size as required. See also float glass.

window glazing bar See muntin.

window hardware All the devices, fittings, or assemblies necessary to operate a window as intended. Window hardware may include catches, cords, fasteners, hinges, handles, locks, pivots, pulls, pulleys, and sash weights.

window jack scaffold A scaffold, the platform of which is supported by a bracket or jack projecting through a window opening.

window lead A slender lead rod with grooves used to hold glass in a window, usually in a decorative window.

window lift (sash lift) A handle fastened to the lower sash of a sliding window for use in moving the sash up or down.

window lock See sash lock.

window of time analysis A method of measuring labor productivity losses on a specific project by comparing labor productivity achieved during a period of time when work activities are subject to disruptive events and conditions, versus productivity during a period of time without disruption.

windowpane A segment of glass in a window.

window pull See sash pull.

window sash See sash.

window schedule A tabulation, usually on a drawing, listing all windows on a project; and indicating sizes, number of lights, type of sash and frame, and hardware required.

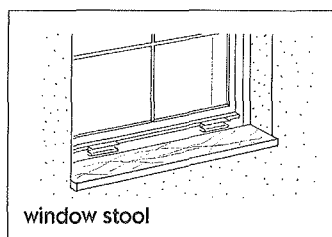
window screen An ornamental grille or lattice set in a window opening.

window seat A built-in seat at a window.

windowsill See sill.

window spring bolt A spring bolt, used on a sash that is not counter-balanced, that holds the sash in a desired position.

window stool A horizontal board or plate at the windowsill on the inside of the window, fitted against the bottom rail of the lower sash to form a base for the casing.



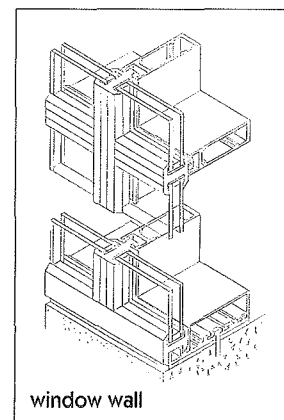
window stop See sash stop.

window tinting Film applied to windows to reduce the amount of solar heat transmission through the glass by increasing the solar reflection (not necessarily visible reflection) and solar absorption of the glass.

window treatment Any of a variety of decorations and coverings for windows, including draperies, blinds, curtains, and their hardware.

window trim The finished casing around a window.

window wall An exterior curtain wall using a frame containing windows that may be fixed or operable. The glazing may be clear, tinted, and/or opaque.



window weight See sash weight.

window well A well dug outside of a below-grade window, commonly a basement window, to allow it to operate.

wind power Energy from wind, usually collected by wind turbines.

wind pressure The pressure produced when wind blows against a surface.

windrow 1. A ridge of loose soil, such as that produced by the spill off of a grader blade. 2. A row of leaves or snow heaped up by the wind.

wind sock A bright-colored cloth tube, used to indicate wind direction.

wind stop 1. A weatherstrip used around a door or window. 2. A strip of wood

or metal that covers the joint where a sash or casement meets a stile. **3.** Any wood or metal strip used to cover a crack in an exterior wall of a building.

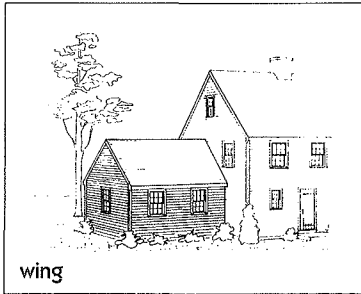
windtight Construction terminology to indicate that all openings and cracks in exterior walls have been sealed.

wind tunnel A structure through which a controlled stream of wind is directed at a model in order to study the probable effects of wind on a structure.

wind uplift The upward component of the force produced as wind blows around or across a structure or an object.

wine cellar (wine vault) A storage room for wine, usually located underground to maintain constant temperature and humidity.

wing **1.** A section or addition extending out from the main part of a building. **2.** The offstage space at a side of a stage. **3.** One of the four leaves of a revolving door.



wing compass A compass with an arc-shaped piece permanently fastened to one leg and clamped at the other by a screw. The arc is usually graduated.

wing dividers Dividers made similar to a wing compass.

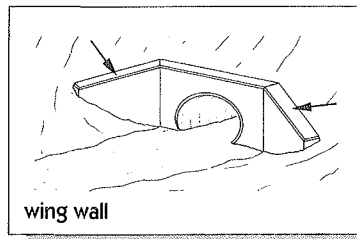
wing nut A nut provided with wing-like projections to facilitate turning by hand.

wing pile A bearing pile (post), usually of concrete, widened at the upper portion to form part of a sheet pile wall.

wing screw A screw provided with wing-like projections to facilitate turning

by hand. A wing screw is often used to secure windows against unauthorized entry.

wing wall **1.** A short section of wall at an angle to a bridge abutment, used as a retaining wall and to stabilize the abutment. **2.** A short section of wall used to guide a stream into an opening, such as at a culvert or bridge.



wiped joint A wiped lead joint connecting two lead pipes.

wire A drawn metal strand or filament.

wire, cold-drawn Wire made from the rods hot-rolled from billets and then cold-drawn through dies. *See also* reinforcement, cold-drawn wire.

wire brad *See* brad.

wire cloth A stiff fabric of woven wire, usually having a larger mesh than insect screen material, and used as reinforcing in plaster, in sieves, and as a leaf catcher in gutters. The number of openings per square inch designates the fineness of the mesh.

wire comb A tool with long wire teeth, used to scratch a coat of wet plaster to increase the bond of a subsequent coat.

wire-cut brick Brick that has been extruded to shape and then cut to length with wire before firing.

wired glass *See* wire glass.

wireframe modeling In computer-aided design, the representation of an object in either a two-dimensional or three-dimensional form, using lines, circles, arcs, and other similar entities to create an outline of the part.

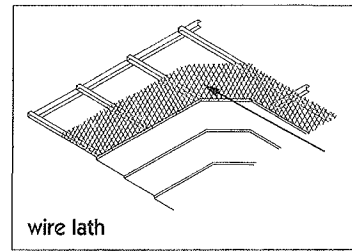
wire gauge **1.** The diameter of a wire as defined by several different systems.

Ordinarily, the thicker the wire is, the smaller the gauge number is. **2.** A device for measuring the thickness of a wire; usually consists of a metal sheet with standard-sized notches on one or more edges.

wire glass Sheet glass with wire mesh embedded in the glass to prevent shattering.

wire holder An electrical insulator having a screw or bolt for fastening the insulator to a support.

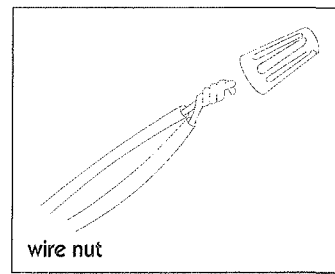
wire lath A welded-wire mesh used as a base for plaster.



wire mesh *See* welded-wire fabric.

wire nail A very thin nail with a small head, often used as a finishing nail.

wire nut A connector for two or more electric conductors, made in the form of a plastic cap with an internal spring-thread. It is turned over the parallel or twisted ends of the conductor wires.



wire rope A rope made of twisted steel strands laid around a central core.

wire saw A machine for sawing stone using a rapidly moving continuous wire carrying a slurry of sand or other abrasive material.

wire stripper

W

wire stripper A hand tool with notched jaws that can grip and cut wire or remove insulation.

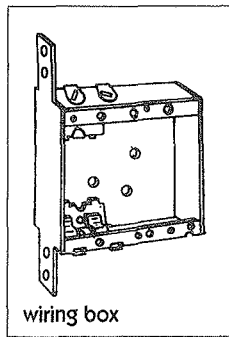
wireway A raceway with a removable cover for access to wires inside.

wire winding Application of high tensile wire, wound under tension by machines, around concrete circular or dome structures to provide tension reinforcing.

wire wrapping See wire winding.

wiring Installing or connecting electrical components. Also refers to systems of wires for electrical work, such as lighting, switchboards, and so forth.

wiring box A box used in interior electric wiring at each junction point, outlet, or switch, that serves as protection for electric connections and as a mounting for fixtures or switches.



withe (wythe) A partition used to separate two flues in a chimney stack. See also wythe.

witness corner A marker set on a property line near to, but not at, a corner. Its relation to the corner is recorded.

wobble coefficient A coefficient used in determining the friction loss occurring in posttensioning that is assumed to account for the secondary curvature of the tendons.

wobble friction In prestressed concrete, the friction caused by the unintended deviation of the prestressing sheath or duct from its specified profile.

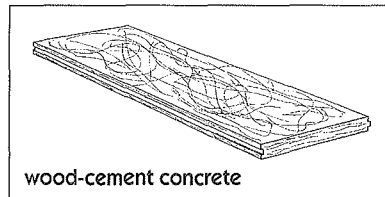
wobble saw See drunken saw.

wobble-wheel roller A pneumatic compactor consisting of a weighted bed mounted on a series of wheels that are loosely assembled, and allowed to work the surface of a soil.

wood block floor A finished floor consisting of rectangular blocks of a tough wood such as oak, set in mastic with the end grain exposed, usually over concrete slab. A wood block floor is used where very heavy traffic and heavy loads are expected.

wood brick (fixing brick, nailing block) A block of wood, the same size as a brick, inserted into brickwork as a base for attaching nailed or screwed objects.

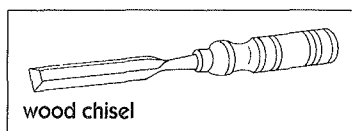
wood-cement concrete A Portland cement concrete using sawdust and wood chips as aggregate.



wood-cement particle (WCP) board A high-density board manufactured in Europe for use on exteriors, or where fire resistance is needed. Wood particles are combined with Portland cement, or another mineral, as a binder.

wood chipboard See particle board.

wood chisel Any of a number of firmer chisels used in carpentry and woodworking.



wood dough A synthetic putty containing wood fibers; used as a filler.

wood-fibered plaster A calcined gypsum plaster containing shredded or ground wood fiber added during manufacture.

wood-fiber emulation Thermal insulation using wood fibers and an asphalt binder.

wood filler A liquid or paste compound used to fill pores or checks in wood before finishing.

wood finishing The final finishing of a wood surface, including planing, sanding, staining, varnishing, waxing and/or painting.

wood fire-retardant treatment The impregnation of wood or wood products with special solutions to reduce the flame spread of the finished product.

wood firestop Wood pieces that are placed between framing members in a wall to slow the spread of fire.

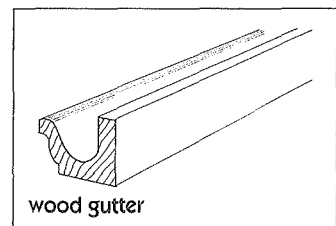
wood flooring Flooring consisting of dressed and matched boards.

wood flour A finely ground, dried, wood powder that is used in plastic wood as an extender. It is also employed in some glues, and in the molding of plastics.

wood-frame construction A type of construction where floors and roofs, as well as exterior and other bearing walls are of wood, rather than masonry.

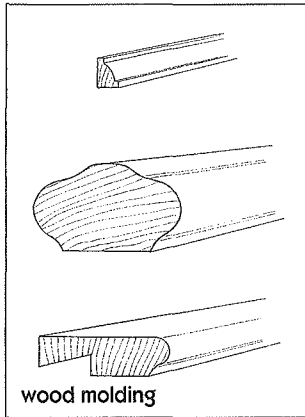
wood-grain print A simulated wood-grain pattern used on plastic veneer, hardboard, and low-grade plywood.

wood gutter A gutter, under the eaves of a roof, made from a solid piece of wood or built-up boards.



wood lath Narrow strips of wood used as a base for plaster.

wood molding Wood strips that are factory-shaped to commercially available patterns.

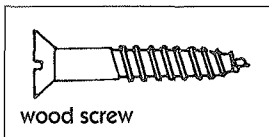


wood oil **1.** Tung oil used in the manufacture of varnish, putty, etc. **2.** An oleoresin used for caulking and waterproofing.

wood preservative Any chemical preservative for wood, applied by washing-on or pressure impregnating. Products used include creosote, sodium fluoride, copper sulfate, and tar or pitch.

wood rasp See rasp.

wood screw A threaded fastener that cuts its way into wood when turned under axial pressure.



wood sill See sill.

wood slip A wooden nailing strip fixed in a masonry or concrete wall as a means of attaching wood trim or furring strips.

wood stud anchor (nailing anchor)

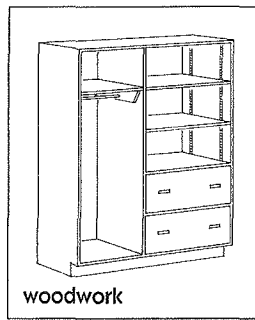
A metal clip attached to the inside of a door frame and used to secure the frame to a wood stud partition.

wood treatment Treatment of wood with a preservative to prevent or retard its decay. See also fire-retardant wood.

wood veneer See veneer.

wood wool See excelsior.

woodwork Work produced by carpenters and woodworkers, especially the finished work.



woodworker's vise Any of a number of tools consisting of two jaws and a mechanism to hold a piece of wood while it is being worked on.

work **1.** All labor and materials required to complete a project in accordance with the contract documents. **2.** The product of a force times the distance traveled.

workability That property of freshly mixed concrete or mortar that determines the ease and homogeneity with which it can be mixed, placed, compacted, and finished.

work bench A durable table or bench used by tradespeople, such as carpenters, for manual project tasks.

work breakdown structure (WBS) A hierarchical breakdown of a project that contains successive levels of detail. Provides a way to incorporate project details as they become available

without having to prepare an entirely new estimate or budget at each new level.

work capacity The greatest volume in number and/or size of construction projects that a contractor can manage efficiently without increasing the overhead costs.

workers' compensation insurance See insurance, Workers' Compensation.

working (movement) The alternate swelling and shrinking of wood caused by changes in its moisture content induced by variations in the humidity of its environment.

working capital The excess of current assets over current liabilities. Cash and other liquid assets.

working drawings See drawings.

working life The length of time a liquid resin or adhesive remains useful after the ingredients have been mixed.

working load Forces normally imposed on a member in service.

working point A point designated on construction drawings as a reference for other points.

working stage A section of an assembly room or auditorium partially cut off from the audience section by a proscenium wall. It is equipped with some or all of the following: scenery loft, gridiron, fly gallery, and lighting equipment.

working stress Maximum permissible design stress using working stress design methods.

working stress design A method of proportioning structures or members for prescribed working loads at stresses well below the ultimate, and assuming linear distribution of flexural stresses.

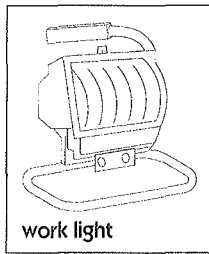
work-in-process The inventory of partly finished projects in various stages of completion at any given time.

work life See working life.

work light

W

work light 1. A light in a theater used to provide illumination for rehearsing, scene shifting, or other work onstage or backstage. 2. A lamp in a protective cage, and having a long, heavy, flexible cord; used to provide temporary illumination in work areas.



work light

workmanship The quality of work performed.

work order See notice to proceed.

work package The grouping of tasks or scopes of work during the procurement phase that can be contracted together for coordination and economy of scale.

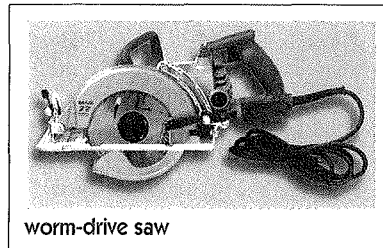
work plane In lighting, the plane at which work is usually done and at which the level of illumination is specified and measured.

work product exclusion In a liability insurance policy, a provision that excludes coverage for business risks, including damages to work performed by or on behalf of the insured.

worksheet The paper on which the calculations supporting the final estimate are recorded.

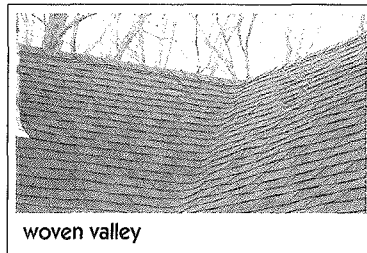
works made for hire A rule applied to works produced within the scope of a job whereby employers are considered creators and owners of their employees' works.

worm-drive saw A circular power saw turned by a worm-gear drive. It is heavier and produces more torque than a standard circular saw.



worm-drive saw

woven valley A roof valley where shingles or other roofing materials from both sides of the valley are woven together as they are applied by overlapping alternate courses.

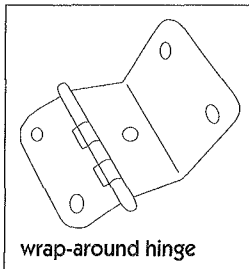


woven valley

woven-wire fabric A prefabricated steel reinforcement for concrete composed of cold-drawn steel wires mechanically twisted together to form hexagonally shaped openings.

woven-wire reinforcement See woven-wire fabric.

wrap-around hinge An offset hinge attached to the rabbeted rail of a door or window, providing increased surface area for mounting.



wrap-around hinge

wrapping A method of applying narrow strips of veneer around a curved surface, such as a piece of furniture.

wreath A short, curved portion of a stair handrail that joins the newel post to the rail.

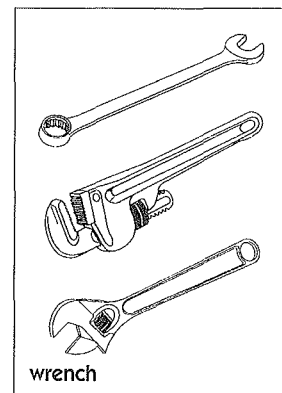
wrecking The process of demolishing a structure.

wrecking ball A heavy steel ball or concrete mass on a heavy chain or cable swung by a crane to demolish parts of a structure.

wrecking bar See pinch bar.

wrecking strip A small piece or panel fitted into a formwork assembly in such a way that it can be easily removed ahead of main panels or forms, making it easier to strip those major form components.

wrench A hand tool consisting of a handle and a jaw at one end; used to turn or hold a bolt, nut, pipe, or fitting. The jaw may be shaped for a specific-sized object or may be adjustable.



wrench

wrinkling (crinkling, reeling) 1. The distortion in a paint film that appears as ripples and may be deliberately induced as a decorative effect or accidentally caused by drying conditions or paint applied too thickly. 2. The rippling or crinkling of the surface of an adhesive, usually not affecting performance. 3. The rippling of an area of veneer, caused by lack of contact with the adhesive.

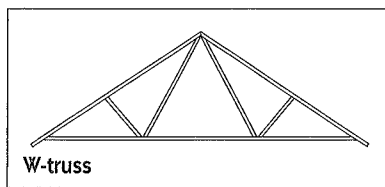
wrought Descriptive of metals or metalwork shaped by hammering with tools.

wrought iron **1.** Nearly pure ductile iron with a very small percentage of silica throughout. Once the surface iron decomposes, the silica surfacing prevents further oxidation. True wrought iron is no longer commercially available. **2.** A number of easily welded or wrought irons with low impurity content used for water pipes, tank plates, or forged work.

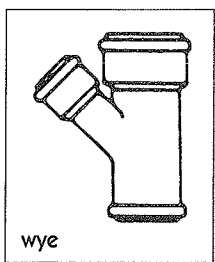
wrought nail A nail wrought by hand, often having a head with a decorative pattern.

wrought timber Wood that has been planed on one or more surfaces.

W-truss A wood roof truss with the web members in the shape of a "W."



wye A pipe fitting with a side outlet that is any angle other than 90° to the main run or axis.

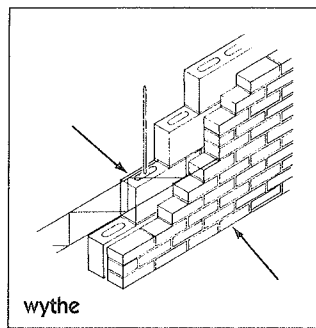


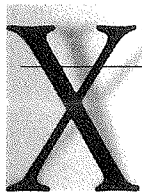
wye branch See Y-branch.

wye fitting See Y-fitting.

wye level See Y-level.

wythe (leaf) Each continuous vertical section of a wall one masonry unit in thickness.





Abbreviations

The abbreviations listed below are commonly used in the construction industry.

X experimental

XBAR crossbar

XEPS extruded expanded polystyrene

XH, X HVY extra heavy

XL extra large

xr without rights

X STR extra strong

xw without warrants

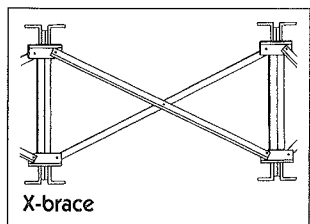
XXH double extra heavy

X

Definitions

xyst

X-brace (cross brace) A paired set of sway braces.



XCU Refers to items excluded, in insurance terminology, from property damage coverage that result from blasting or explosion (X), structural damage or collapse (C), and damage caused during excavation by mechanical equipment (U).

xeriscaping Landscaping featuring native, drought-tolerant, well-adapted plant species, especially in dry climates, to avoid the need for irrigation. Xeriscaping typically calls for less fertilizer and fewer pest control measures than traditional landscapes.

xonolite Calcium silicate monohydrate ($\text{C}_3\text{S}_2\text{H}$), a natural mineral that is readily synthesized at 150°C – 350°C under saturated steam pressure. Xonolite is a constituent of sand-lime masonry units.

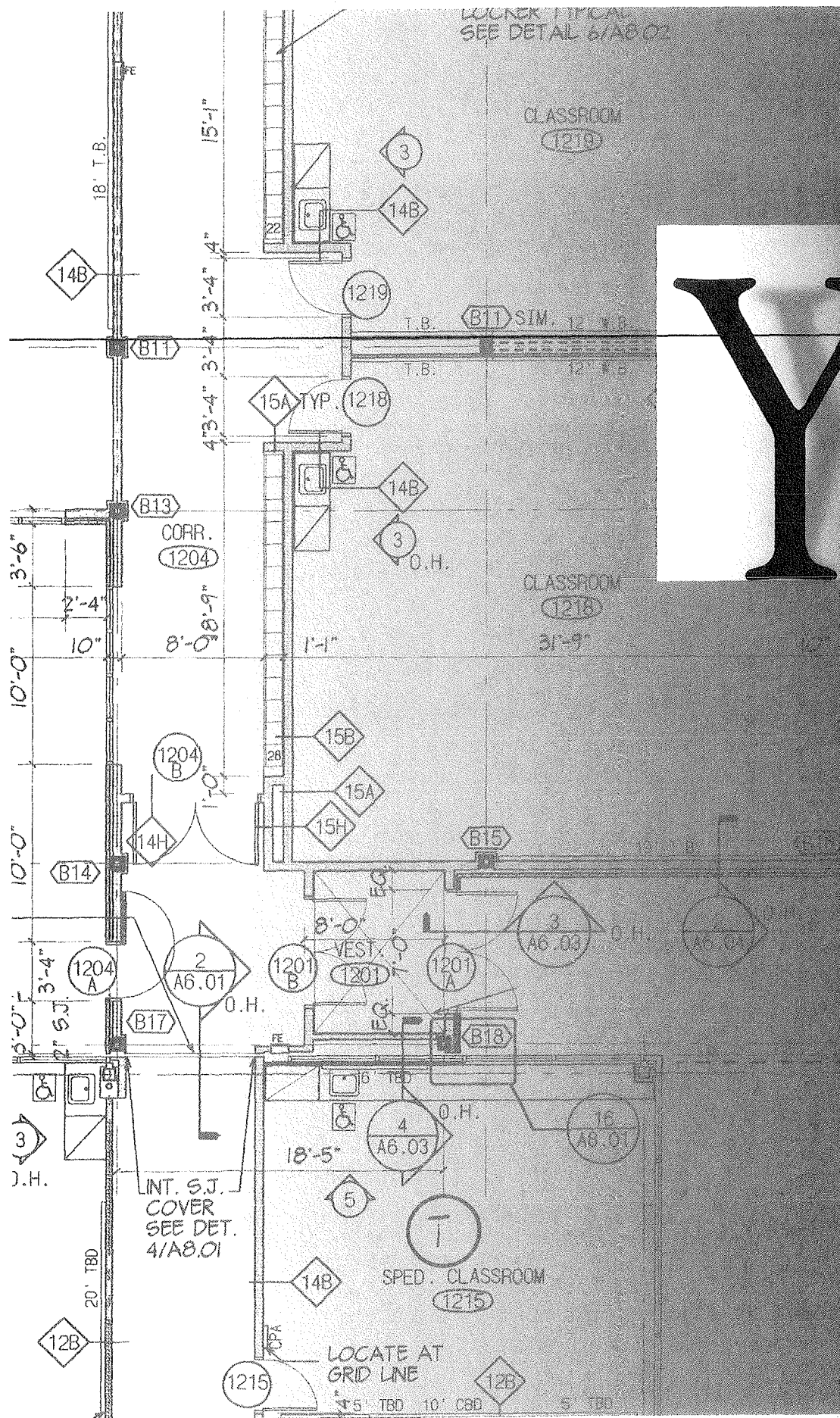
x-ray diffraction **1.** The diffraction of x-rays by substances having a regular arrangement of atoms.
2. A phenomenon used to identify substances having such structure.

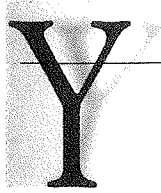
x-ray fluorescence Characteristic secondary radiation emitted by an element as a result of excitation by x-rays, used to yield a chemical analysis of a sample.

x-ray protection Lead encased in drywall or plaster to prevent the escape of radiation from the encased room.

xylol An aromatic hydrocarbon distilled from coal tar, used as a solvent for paints and varnishes.

xyst **1.** A tree-shaded walk or promenade.
2. A roofed colonnade for exercise in bad weather.





Abbreviations

The abbreviations listed below are commonly used in the construction industry.

y yard

Y yttrium, wye, Y-branch

yd yard

yp yellow pine

YP yield point

YR year

YS yield strength

Y

Definitions

Y-shape fitting

yakima pine See ponderosa pine.

Yankee screwdriver See spiral ratchet screwdriver.

yard **1.** A unit of length in the English system equal to 3'. **2.** A measure of concrete. One cubic yard = 3' x 3' x 3' in volume, or 27 cubic feet. **3.** A term applied to that part of a plot not occupied by the building or driveway.

yardage **1.** An amount of excavated material equal to the volume in cubic yards. **2.** An area of surface (two dimensions) measured in square yards.

yard drain A drain in a pavement or earth surface, used to drain surface water.

yard lumber (general building construction lumber) Lumber graded according to its size, length, and intended use, stockpiled in a lumber yard.

Y-branch (we branch) A plumbing system branch, in the shape of a "Y."

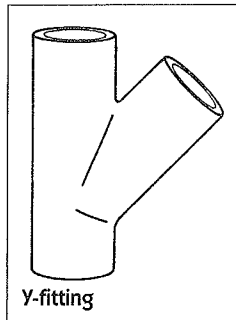
yellowing Development of yellow color or cast in white or clear coatings, after aging.

yellow pine The hard resinous wood from this long-leaved pine tree is used as flooring and in general construction.

yellow poplar (poplar) A moderately low-density, even-textured hardwood from central and southern United States, used for veneer, plywood, and cabinet work.

yelm A bundle of reeds or straw used as thatching material for a roof.

Y-fitting (we fitting) A pipe fitting in the shape of a "Y." One arm is usually at 45° to the main fitting and may be of reduced size.



Y-highway Expressway intersection at a grade that steers traffic in three directions.

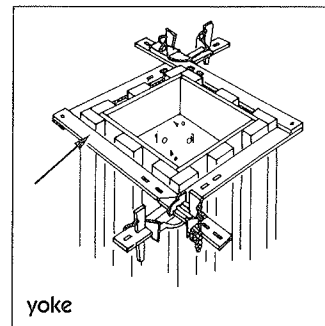
yield **1.** The volume of freshly mixed concrete produced from a known quantity of ingredients. **2.** The total weight of ingredients divided by the unit weight of the freshly mixed concrete. **3.** The number of product units, such as block, produced per bag of cement or per batch of concrete. **4.** A rate of return as calculated by the profit earned on an investment over a specified period of time.

yield point **1.** The point at which a stressed material begins to exhibit plastic properties. **2.** The point beyond which the material will not return to its original length.

yield strength The stress, less than the maximum attainable, at which the ratio of stress to strain has dropped well below its value at low stresses, or at which a material exhibits a specified limiting deviation from the usual proportionality of stress to strain.

Y-level A surveyor's level with the telescope and level supported by Y-shaped fittings. The telescope can be removed and reversed in order to average out internal sources of error.

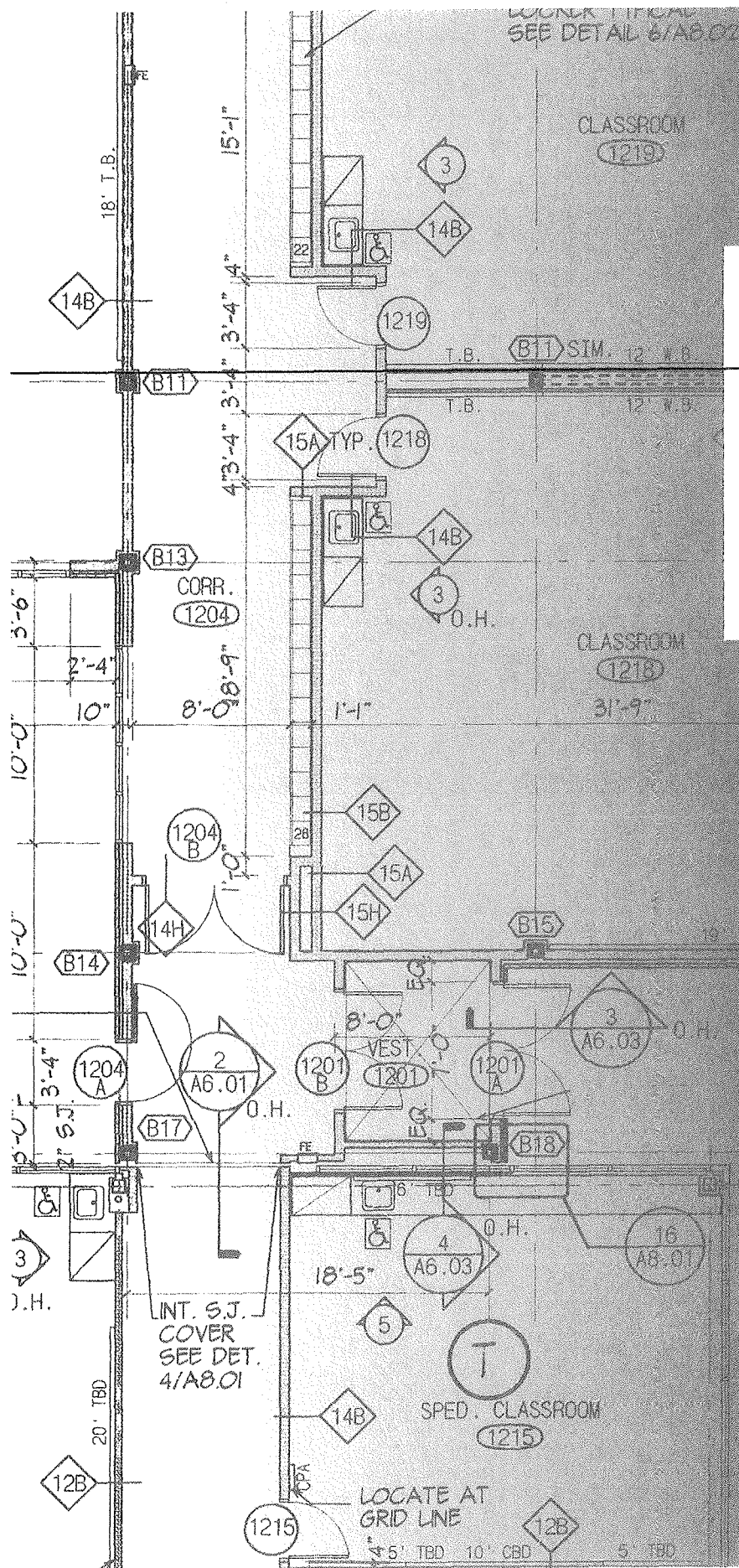
yoke **1.** A tie or clamping device around column forms or over wall or footing forms to keep them from spreading as a result of lateral pressure of fresh concrete. **2.** Part of a structural assembly for slipforming that keeps the forms from spreading and transfers form loads to the jacks. **3.** A collar for supporting pipe. **4.** A soil pipe fitting in the shape of a "Y." **5.** Pipe assembly used to install a water meter.



yoke vent **1.** A pipe connecting upward from a soil or waste stack to a vent stack for venting. **2.** A vertical or 45° relief vent of the continuous waste and vent type formed by the extension of an upright we-branch inlet of the horizontal branch to the stack. Referred to as a *dual yoke vent* when two horizontal branches are thus vented by the same relief vent.

Young's modulus See modulus of elasticity.

Y-shape fitting Plumbing fitting in the shape of a Y. Also called a we.





Abbreviations

The abbreviations listed below are commonly used in the construction industry.

z zero, zone

Z modulus of section

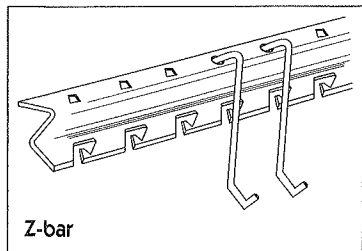
ZI zone of interior

Zn azimuth, zinc

Z Definitions

zoned building design

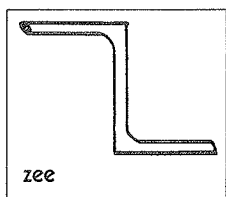
Z-bar A Z-shaped member that is used as a main runner in some types of acoustical ceiling.



Z-bar flashing Z-shaped flashing installed above horizontal door or window trim to keep rainwater from seeping into a structure.

zebra wood *Connarus guianensis*. A tropical hardwood with strikingly marked grain, used for decorative purposes in cabinetry and paneling.

zee A light-gauge member with a Z-like cross section. The flanges of the Z are approximately at right angles to the web.



zeolite A group of hydrous aluminum silicate minerals or similar synthetic compounds used in water-softening equipment.

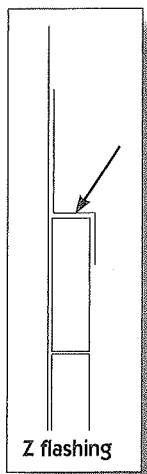
zero lot line A form of cluster-housing development in which individual dwelling units are placed on separately plotted lots with very small yards.

zero-slump concrete Concrete of stiff or extremely dry consistency showing no measurable slump after removal of the slump cone. *See also slump and no-slump concrete.*

zero-water urinal An energy-efficient, wall-mounted urinal that uses no running water, other than for occasional servicing to clean the unit.

zeta **1.** A small closed room. **2.** Originally a room over the porch of a Christian church, used as living quarters for a porter or sexton and for storage of documents.

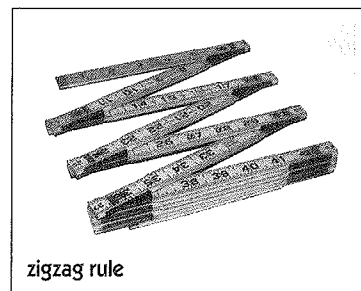
Z flashing Z-shaped metal flashing applied between panels of plywood siding to shed water.



Z-furring channel A Z-shaped, galvanized steel track used to mechanically attach blanket or rigid plastic foam insulation to interiors of exterior walls. Also used to attach drywall to concrete, brick, concrete block, and tile.

zigzag bond Similar to herringbone bond.

zigzag rule A folding ruler made of pieces connected by pivots.



zinc A metallic element used for galvanizing steel sheet and steel or iron castings, as an alloy in various metals, as an oxide for white paint pigment, and as a sacrificial element in a cathodic protection system. Characterized by its brittleness in ordinary temperatures.

zinc chromate A bright yellow pigment used in paints that has good rust-inhibiting properties.

zinc coating *See galvanize.*

zinc dust Zinc ground to a fine powder and used as a pigment in priming paints, especially those for use on galvanized surfaces.

zinc oxide (zinc white) A pigment used in paints to provide durability, color retention, and hardness, and to improve sag resistance.

zinc white *See zinc oxide.*

zinc yellow Bright yellow pigments of zinc chromates used in primers and paints as a rust inhibitor.

zone **1.** A space or group of spaces in a building with common control of heating and cooling. **2.** A form of public control over land use. **3.** An area covered by a sprinkler system.

zoned building design Separating areas of a facility by establishing a series of clearly discernible zones to control access.

zone valve

Z

zone valve A control device for the flow of water or steam to areas, or zones, of a building.

zoning **1.** The reservation of certain specified areas within a community or city for buildings and structures, use of land, or purposes with limitations (such as height, lot coverage, and other stipulated requirements). **2.** Dividing a building into sections for heating and cooling purposes.

zoning code Local government requirements that regulate and restrict land and building aspects such as use, size, siting, and development.

zoning envelope See **envelope**.

zoning permit A permit issued by municipal or local government officials authorizing the use of a piece of land for a stated purpose.

Reference Section

A. Weights, Measures, Equivalents, and Conversions

- Standard Weights and Measures
- Decimals of a Foot for Each 32nd of an Inch
- Water: Various Pressure and Flow Units
- Volume and Capacity
- Mechanical-Electrical Equivalents
- Average Weights for Various Materials

B. Metric Conversions and Equivalents

- Basic Metric Units and Prefixes
- Metric Equivalents
- Metric Conversion Table
- Standard and Metric Linear and Area Conversion Tables
- General Conversion Factors
- Approximate Comparison of Drawing Scales

C. Preliminary Building Size Determination

- Occupancy Determinations – Net Areas
- Unit Gross Area Requirements
- Floor Area Ratios

D. Definitions of Abbreviations Used in Formulas

E. Symbols

- Electrical
- HVAC
- Plumbing
- Material Indication
- Window and Door

F. Professional Associations

Weights, Measures, Equivalents, and Conversions

A

Standard Weights and Measures

Linear Measure	Square Measure
1000 mils = 1 inch	144 square inches = 1 square foot
12 inches = 1 foot	9 square feet = 1 square yard
3 feet = 1 yard	
2 yards = $\begin{cases} 1 \text{ fathom} \\ 6 \text{ feet} \end{cases}$	30-1/4 square yds. = $\begin{cases} 1 \text{ square rod} \\ 272-1/4 \text{ square feet} \end{cases}$
5-1/2 yards = $\begin{cases} 1 \text{ rod} \\ 16-1/2 \text{ feet} \end{cases}$	160 square rods = $\begin{cases} 1 \text{ acre} \\ 43,560 \text{ square feet} \end{cases}$
40 rods = $\begin{cases} 1 \text{ furlong} \\ 660 \text{ feet} \end{cases}$	640 acres = $\begin{cases} 1 \text{ square mile} \\ 27,878,400 \text{ square feet} \end{cases}$
8 furlongs = $\begin{cases} 1 \text{ mile} \\ 5280 \text{ feet} \end{cases}$	A circular mil is the area of a circle 1 mil, or 0.001 inch in diameter.
1.15156 miles = $\begin{cases} 1 \text{ nautical mile,} \\ \text{or knot} \\ 6080.26 \text{ feet} \end{cases}$	1 square inch = 1,273,239 circular mils
3 nautical miles = $\begin{cases} 1 \text{ league} \\ 18,240.78 \text{ feet} \end{cases}$	A circular inch is the area of a circle 1 inch in diameter = 0.7854 square inches.
	1 square inch = 1.2732 circular inches
Dry Measure	Weight—Avoirdupois or Commercial
2 pints = 1 quart	437.5 grains = 1 ounce
8 quarts = 1 peck	16 ounces = 1 pound
4 pecks = $\begin{cases} 1 \text{ bushel} \\ 2150.42 \text{ cubic in.} \\ 1.2445 \text{ cubic feet} \end{cases}$	112 pounds = 1 hundredweight
	20 hundredweight = $\begin{cases} 1 \text{ gross, or long ton} \\ 2240 \text{ pounds} \end{cases}$
	2000 pounds = 1 net, or short ton
	2204.6 pounds = 1 metric ton
	1 lb. of water (39.1°F) = 27.681217 cu. in.
	= 0.016019 cu. ft.
	= 0.119832 U.S. gallon
	= 0.453617 liter

Decimals of a Foot for Each 32nd of an Inch

Inch	0	1	2	3	4	5	6	7	8	9	10	11
0	0	.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167
1/32	.0026	.0859	.1693	.2526	.3359	.4193	.5026	.5859	.6693	.7526	.8359	.9193
1/16	.0052	.0885	.1719	.2552	.3385	.4219	.5052	.5885	.6719	.7552	.8385	.9219
3/32	.0078	.0911	.1745	.2578	.3411	.4245	.5078	.5911	.6745	.7578	.8411	.9245
1/8	.0104	.0938	.1771	.2604	.3438	.4271	.5104	.5938	.6771	.7604	.8438	.9271
5/32	.0130	.0964	.1797	.2630	.3464	.4297	.5130	.5964	.6797	.7630	.8464	.9297
3/16	.0156	.0990	.1823	.2656	.3490	.4323	.5156	.5990	.6823	.7656	.8490	.9323
7/32	.0182	.1016	.1849	.2682	.3516	.4349	.5182	.6016	.6849	.7682	.8516	.9349
1/4	.0208	.1042	.1875	.2708	.3542	.4375	.5208	.6042	.6875	.7708	.8542	.9375
9/32	.0234	.1068	.1901	.2734	.3568	.4401	.5234	.6068	.6901	.7734	.8568	.9401
5/16	.0260	.1094	.1927	.2760	.3594	.4427	.5260	.6094	.6927	.7760	.8594	.9427
11/32	.0286	.1120	.1953	.2786	.3620	.4453	.5286	.6120	.6953	.7786	.8620	.9453
3/8	.0313	.1146	.1979	.2812	.3646	.4479	.5313	.6146	.6979	.7813	.8646	.9479
13/32	.0339	.1172	.2005	.2839	.3672	.4505	.5339	.6172	.7005	.7839	.8672	.9505
7/16	.0365	.1198	.2031	.2865	.3698	.4531	.5365	.6198	.7031	.7865	.8698	.9531
15/32	.0391	.1224	.2057	.2891	.3724	.4557	.5391	.6224	.7057	.7891	.8724	.9557
1/2	.0417	.1250	.2083	.2917	.3750	.4583	.5417	.6250	.7083	.7917	.8750	.9583
17/32	.0443	.1276	.2109	.2943	.3776	.4609	.5443	.6276	.7109	.7943	.8776	.9609
9/16	.0469	.1302	.2135	.2969	.3802	.4635	.5469	.6302	.7135	.7969	.8802	.9635
19/32	.0495	.1328	.2161	.2995	.3828	.4661	.5495	.6328	.7161	.7995	.8828	.9661
5/8	.0521	.1354	.2188	.3021	.3854	.4688	.5521	.6354	.7188	.8021	.8854	.9688
21/32	.0547	.1380	.2214	.3047	.3880	.4714	.5547	.6380	.7214	.8047	.8880	.9714
11/16	.0573	.1406	.2240	.3073	.3906	.4740	.5573	.6406	.7240	.8073	.8906	.9740
23/32	.0599	.1432	.2266	.3099	.3932	.4766	.5599	.6432	.7266	.8099	.8932	.9766
3/4	.0625	.1458	.2292	.3125	.3958	.4792	.5625	.6458	.7292	.8125	.8958	.9792
25/32	.0651	.1484	.2318	.3151	.3984	.4818	.5651	.6484	.7318	.8151	.8984	.9818
13/16	.0677	.1510	.2344	.3177	.4010	.4844	.5677	.6510	.7344	.8177	.9010	.9844
27/32	.0703	.1536	.2370	.3203	.4036	.4870	.5703	.6536	.7370	.8203	.9036	.9870
7/8	.0729	.1563	.2396	.3229	.4063	.4896	.5729	.6563	.7396	.8229	.9063	.9896
29/32	.0755	.1589	.2422	.3255	.4089	.4922	.5755	.6589	.7422	.8255	.9089	.9922
15/16	.0781	.1615	.2448	.3281	.4115	.4948	.5781	.6615	.7448	.8281	.9115	.9948
31/32	.0807	.1641	.2474	.3307	.4141	.4974	.5807	.6641	.7474	.8307	.9141	.9974

Weights, Measures, Equivalents, and Conversions

A

Water: Various Pressure and Flow Units

Comparison of Heads of Water in Feet with Pressures in Various Units	
One foot of water at 39.1° F	= 62.425 pounds per square foot (psf) = 0.4335 pounds per square inch = 0.0295 atmosphere = 0.8826 inches of mercury at 30° F = 773.3 feet of air at 32° F and atmospheric pressure
One foot of water at 62° F	= 62.355 pounds per square foot = 0.43302 pounds per square inch
One pound of water on the square inch at 62° F	= 2.3094 feet of water
One ounce of water on the square inch at 62° F	= 1.732 inches of water
1 atmosphere at sea level (32° F)	= 14.697 lbs. per sq. in. = 29.921 in. of mercury
1 inch of mercury (32° F)	= 0.49119 lbs. per sq. in.
Flowing Water	
cfs	= cubic feet per second, or second feet
gpm	= gallons per minute
1 cfs	= 60 cu. ft. per min. = 86,400 cu. ft. per 24 hrs. = 448.83 U.S. gals. per min. = 646,317 U.S. gals. per 24 hrs. = 1.9835 acre-foot per 24 hrs. (usually taken as 2) = 1 acre-inch per hour (approximate) = .028317 cu. meter per second
1 U.S. gpm	= 1440 U.S. gals per 24 hrs. = 0.00442 acre-foot per 24 hrs. = 0.0891 Miners inches, Ariz., Calif.
1 million U.S. gal. per day	= 1.5472 cfs = 3.07 acre-feet = 2.629 cu. meters per min.

Volume and Capacity

Units and Equivalents	
1 cu. ft. of water at 39.1° F	= 62.425 lbs.
1 United States gallon	= 231 cu. in.
1 imperial gallon	= 277.274 cu. in.
1 cubic foot of water	= 1728 cu. in.
	= 7.480519 U.S. gallons
	= 6.232103 imperial gallons
1 cubic yard	= 27 cu. ft. = 46.656 cu. in.
1 quart	= 2 pints
1 gallon	= 4 quarts
1 U.S. gallon	= 231 cu. in.
	= 0.133681 cu. ft.
	= 0.83311 imperial gallons
	= 8.345 lbs.
1 barrel	= 31.5 gallons = 4.21 cu. ft.
1 U.S. bushel	= 1.2445 cu. ft.
1 fluid ounce	= 1.8047 cu. in.
1 acre-foot	= 43,560 cu. ft.
	= 1,613.3 cu. yds.
1 acre-inch	= 3,630 cu. ft.
1 million U.S. gallons	= 133,681 cu. ft.
	= 3.0689 acre-ft.
1 ft. depth on 1 sq. mi.	= 27,878,400 cu. ft.
	= 640 acre-ft.
1 cord	= 128 cu. ft.

Weights, Measures, Equivalents, and Conversions

A

Mechanical-Electrical Equivalents

Power	
1 horsepower (hp)	= 550 foot-pounds (ft.-lbs.) per second (sec.)
	= 33,000 ft.-lbs. per minute (min.)
	= 1,980,000 ft.-lbs. per hour (hr.)
	= .275 ft.-tons per sec.
	= 16.5 ft.-tons per min.
	= 990 ft.-tons per hr.
1 horsepower-second (hp-sec.)	= 550 ft.-lbs.
	= .275 ft.-tons.
1 horsepower-minute (hp-min.)	= 33,000 ft.-lbs.
	= 16.5 ft.-tons.
1 horsepower-hour (hp-hr.)	= 1,980,000 ft.-lbs.
	= 990 ft.-tons
1 horsepower (hp)	= 746 watts (w)
	= .746 kilowatts (kw)
Energy	
1 horsepower-hour	= 2544 BTU
	= .746 kw-hr.
1 kilowatt-hour	= 3413 BTU
Pressure	
1 lb. per sq. in.	= 2.0360" of mercury at 32° F
	= 27.71" of water at 32° F
	= 2.3091 ft. of water at 60° F
	= 144 lbs. per sq. ft.
1 in. of mercury	= .491 lbs. per sq. in.
1 in. of water	= 5.2 lbs. per sq. ft. = .0361 PSI

Average Weights for Various Materials

Substance	Weight Lbs. per C.F.	Substance	Weight Lbs. per C.F.
Ashlar Masonry		Excavations in Water	
Granite, syenite, gneiss	165	Sand or gravel	60
Limestone, marble	160	Sand or gravel and clay	65
Sandstone, bluestone	140	Clay	80
Mortar Rubble Masonry		River mud	90
Granite, syenite, gneiss	155	Soil	70
Limestone, marble	150	Stone riprap	65
Sandstone, bluestone	130	Minerals	
Dry Rubble Masonry		Asbestos	153
Granite, syenite, gneiss	130	Barytes	281
Limestone, marble	125	Basalt	184
Sandstone, bluestone	110	Bauxite	159
Brick Masonry		Borax	109
Pressed brick	140	Chalk	137
Common brick	120	Clay, marl	137
Soft brick	100	Dolomite	181
Concrete Masonry		Feldspar, orthoclase	159
Cement, stone, sand	144	Gneiss, serpentine	159
Cement, slag, etc.	130	Granite, syenite	175
Cement, cinder, etc.	100	Greenstone, trap	187
Expanded slag aggregate	100	Gypsum, alabaster	159
Haydite (burned clay agg.)	90	Hornblende	187
Vermiculite/perlite, load bearing	70-105	Limestone, marble	165
Vermiculite and perlite, non-load bearing	25-50	Magnesite	187
Concrete Masonry Reinforced		Phosphate rock, apatite	200
Stone aggregate	150	Porphyry	172
Slag aggregate	138	Pumice, natural	40
Lightweight aggregates	30-106	Quartz, flint	165
Various Building Materials		Sandstone, bluestone	147
Ashes, cinders	40-45	Shale, slate	175
Cement, Portland, loose	90	Soapstone, talc	169
Cement, Portland, set	183	Stone, Quarried, Piled	
Lime, gypsum, loose	53-64	Basalt, granite, gneiss	96
Mortar, set	103	Limestone, marble, quartz	95
Slags, bank slag	67-72	Sandstone	82
Slags, bank screenings	98-117	Shale	92
Slags, machine slag	96	Greenstone, hornblende	107
Slags, slag sand	49-55	Bituminous Substances	
Earth, Etc., Excavated		Asphaltum	81
Clay, dry	63	Coal, anthracite	97
Clay, damp, plastic	110	Coal, bituminous	84
Clay and gravel, dry	100	Coal, lignite	78
Earth, dry, loose	76	Coal, peat, turf, dry	47
Earth, dry, packed	95	Coal, charcoal, pine	23
Earth, moist, loose	78	Coal, charcoal, oak	33
Earth, moist, packed	96	Coal, coke	75
Earth, mud, flowing	108	Graphite	131
Earth, mud, packed	115	Paraffine	56
Riprap, limestone	80-85	Petroleum	54
Riprap, sandstone	90	Petroleum, refined	50
Riprap, shale	105	Petroleum, benzine	46
Sand, gravel, dry, loose	90-105	Petroleum, gasoline	42
Sand, gravel, dry, packed	100-120	Pitch	69
Sand, gravel, wet	118-120	Tar, bituminous	75

Weights, Measures, Equivalents, and Conversions

A

Average Weights for Various Materials (continued)

Substance	Weight Lbs. per C.F.	Substance	Weight Lbs. per C.F.
Coal and Coke, Piled		Rubber goods	94
Coal, anthracite	47-58	Salt, granulated, piled	48
Coal, bituminous, lignite	40-54	Saltpeter	67
Coal, peat, turf	20-26	Starch	96
Coal, charcoal	10-14	Sulphur	125
Coal, coke	23-32	Wool	82
Metals, Alloys, Ores		Timber, U.S. Seasoned	
Aluminum, cast, hammered	165	Moisture Content by Weight:	
Brass, cast, rolled	534	Seasoned timber 15 to 20%	
Bronze, 7.9 to 14% Sn	509	Green timber up to 50%	
Bronze, aluminum	481	Ash, white, red	40
Copper, cast, rolled	556	Cedar, white, red	22
Copper ore, pyrites	262	Chestnut	41
Gold, cast, hammered	1205	Cypress	30
Iron, cast, pig	450	Fir, Douglas spruce	32
Iron, wrought	485	Fir, eastern	25
Iron, spiegel-eisen	468	Elm, white	45
Iron, ferro-silicon	437	Hemlock	29
Iron ore, hematite	325	Hickory	49
Iron ore, hematite in bank	160-180	Locust	46
Iron ore, hematite loose	130-160	Maple, hard	43
Iron ore, limonite	237	Maple, white	33
Iron ore, magnetite	315	Oak, chestnut	54
Iron slag	172	Oak, live	59
Lead	710	Oak, red, black	41
Lead ore, galena	465	Oak, white	46
Magnesium, alloys	112	Pine, Oregon	32
Manganese	475	Pine, red	30
Manganese ore, pyrolusite	259	Pine, white	26
Mercury	849	Pine, yellow, long-leaf	44
Monel Metal	565	Pine, yellow, short-leaf	38
Nickel	565	Poplar	30
Platinum, cast, hammered	1330	Redwood, California	26
Silver, cast, hammered	565	Spruce, white, black	27
Steel, rolled	490	Walnut, black	38
Tin, cast, hammered	459	Walnut, white	26
Tin ore, cassiterite	418	Various Liquids	
Zinc, cast, rolled	440	Alcohol, 100%	49
Zinc ore, blende	253	Acids, muriatic 40%	75
Various Solids		Acids, nitric 91%	94
Cereals, oats, bulk	32	Acids, sulphuric 87%	112
Cereals, barley, bulk	39	Lye, soda 66%	106
Cereals, corn, rye, bulk	48	Oils, vegetable	58
Cereals, wheat, bulk	48	Oils, mineral, lubricants	57
Hay and straw, bales	20	Water, 4°C. max. density	62.428
Cotton, flax, hemp	93	Water, 100°C.	59.830
Fats	58	Water, ice	56
Flour, loose	28	Water, snow, fresh fallen	8
Flour, pressed	47	Water, sea water	64
Glass, common	156	Gases	
Glass, plate or crown	161	Air, 0°C. 760 mm	.08071
Glass, crystal	184	Ammonia	.0478
Leather	59	Carbon dioxide	.1234
Paper	58	Carbon monoxide	.0781
Potatoes, piled	42	Gas, illuminating	.028-.036
Rubber, caoutchouc	59	Gas, natural	.038-.039

Average Weights for Various Materials (continued)

Material	Weight Lbs. per S.F.	Material	Weight Lbs. per S.F.
Gases (cont.)		Partitions	
Hydrogen	.00559	Clay Tile	
Nitrogen	.0784	3 in.	17
Oxygen	.0892	4 in.	18
Ceilings		6 in.	28
Channel suspended system	1	8 in.	34
Lathing and plastering	See	10 in.	40
Acoustical fiber tile	Partitions 1	Gypsum Block	
Floors		2 in.	9-1/2
Steel Deck	See Mfg.	3 in.	10-1/2
Concrete-Reinforced 1 in.		4 in.	12-1/2
Stone	12-1/2	5 in.	14
Slag	11-1/2	6 in.	18-1/2
Lightweight	6 to 10	Wood Studs 2 x 4	
Concrete-Plain 1 in.		12-16 in. o.c.	2
Stone	12	Steel partitions	4
Slag	11	Plaster 1 inch	
Lightweight	3 to 9	Cement	10
Fills 1 in.		Gypsum	5
Gypsum	6	Lathing	
Sand	8	Metal	1/2
Cinders	4	Gypsum Board 1/2 in.	2
Finishes		Walls	
Terrazzo 1 in.	13	Brick	
Ceramic or Quarry Tile 3/4 in.	10	4 in.	40
Linoleum 1/4 in.	1	8 in.	80
Mastic 3/4 in.	9	12 in.	120
Hardwood 7/8 in.	4	Hollow Concrete Block	
Softwood 3/4 in.	2-1/2	(Heavy Aggregate)	
Roots		4 in.	30
Copper or tin	1	6 in.	43
3-ply ready roofing	1	8 in.	55
3-ply felt and gravel	5-1/2	12-1/2 in.	80
5-ply felt and gravel	6	Hollow Concrete Block	
Shingles		(Light Aggregate)	
Wood	2	4 in.	21
Asphalt	3	6 in.	30
Clay tile	9 to 14	8 in.	38
Slate 1/4 in.	10	12 in.	55
Sheathing		Clay Tile	
Wood 3/4 in.	3	(Load Bearing)	
Gypsum 1 in.	4	4 in.	25
Insulation 1 in.		6 in.	30
Loose	1/2	8 in.	33
Poured in place	2	12 in.	45
Rigid	1-1/2	Stone 4 in.	55
		Glass Block 4 in.	18
		Windows, Glass, Frame & Sash	8
		Curtain Walls	See Mfg.
		Structural Glass 1 in.	15
		Corrugated Cement	
		Asbestos 1/4 in.	3

Metric Conversions and Equivalents

B

Basic Metric Units and Prefixes

Basic Metric Units		Prefixes for Metric Units		
Quantity	Unit	Multiple and Submultiple	Prefix	Symbol
length	meter (m)	$1,000,000,000,000 = 10^{12}$	tera	T
mass	kilogram (kg)	$1,000,000,000 = 10^9$	giga	G
time	second (s)	$1,000,000 = 10^6$	mega	M
electric current	ampere (A)	$1,000 = 10^3$	kilo	k
temperature (thermodynamic)	kelvin (K)	$100 = 10^2$	hecto	h
amount of substance	mole (mol)	$10 = 10$	deka	da
luminous intensity	candela (cd)	$0.1 = 10^{-1}$	deci	d
		$0.01 = 10^{-2}$	centi	c
		$0.001 = 10^{-3}$	milli	m
		$0.000\ 001 = 10^{-6}$	micro	μ
		$0.000\ 000\ 001 = 10^{-9}$	nano	n
		$0.000\ 000\ 000\ 001 = 10^{-12}$	pico	p
		$0.000\ 000\ 000\ 000\ 001 = 10^{-15}$	femto	f
		$0.000\ 000\ 000\ 000\ 000\ 001 = 10^{-18}$	atto	a

Metric Equivalents

Length	
Cm. = 0.3937 in.	In. = 2.5400 cm.
Meter = 3.2808 ft.	Ft. = 0.3048 m.
Meter = 1.0936 yd.	Yd. = 0.9144 m.
Km. = 0.6214 mile	Mile = 1.6093 km.
Area	
Sq. cm. = 0.1550 sq. in.	Sq. in. = 6.4516 sq. cm.
Sq. m. = 10.7639 sq. ft.	Sq. ft. = 0.0929 sq. m.
Sq. m. = 1.1960 sq. yd.	Sq. yd. = 0.8361 sq. m.
Hectare = 2.4710 acres	Acre = 0.4047 hectare
Sq. km. = 0.3861 sq. mile	Sq. mile = 2.5900 sq. km.
Volume	
Cu. cm. = 0.0610 cu. in.	Cu. in. = 16.3872 cu. cm.
Cu. m. = 35.3145 cu. ft.	Cu. ft. = 0.0283 cu. m.
Cu. m. = 1.3079 cu. yd.	Cu. yd. = 0.7646 cu. m.
Capacity	
Liter = 61.0250 cu. in.	Cu. in. = 0.0164 liters
Liter = 0.0353 cu. ft.	Cu. ft. = 28.3162 liters
Liter = 0.2642 gal. (U.S.)	Gal. = 3.7853 liters
Liter = 0.0284 bu. (U.S.)	Bu. = 35.2383 liters
Liter = $\begin{cases} 1000.027 \text{ cu. cm.} \\ 1.0567 \text{ qt. (liquid) or } 0.9081 \text{ qt. (dry)} \\ 2.2046 \text{ lbs. of pure water at } 4^{\circ}\text{C} + 1 \text{ kg.} \end{cases}$	
Weight	
Gram = 15.4324 grains	Grain = 0.0648 g.
Gram = 0.0353 oz.	Oz. = 28.3495 g.
Kg. = 2.2046 lbs.	Lb. = 0.4536 kg.
Kg. = 0.0011 ton (short)	Ton (short) = 907.1848 kg.
Ton (met.) = 1.1023 ton (short)	Ton (short) = 0.9072 ton (met.)
Ton (met.) = 0.9842 ton (large)	Ton (large) = 1.0160 ton (met.)
Pressure	
1 kg. per sq. cm. = 14.223 lbs. per sq. in.	
1 lb. per sq. in. = 0.0703 kg. per sq. cm.	
1 kg. per sq. m. = 0.2048 lbs. per sq. ft.	
1 lb. per sq. ft. = 4.8824 kg. per sq. m.	
1 kg. per sq. cm. = 0.9678 normal atmosphere	
1 normal atmosphere = $\begin{cases} 1.0332 \text{ kg. per sq. cm.} \\ 1.0133 \text{ bars} \\ 14.696 \text{ lbs. per sq. in.} \end{cases}$	

Metric Conversions and Equivalents

B

Metric Conversion Table

Conversion Formulas: Inches x 2.54 = Centimeters

Feet x .3048 = Meters

Pounds x .4536 = Kilograms

	Inches to Centimeters	Feet to Meters	Pounds to Kilograms		Inches to Centimeters	Feet to Meters	Pounds to Kilograms
1	2.54	.3048	.4536	51	129.54	15.5448	23.1336
2	5.08	.6096	.9072	52	132.08	15.8496	23.5872
3	7.62	.9144	1.3608	53	134.62	16.1544	24.0408
4	10.16	1.2192	1.8144	54	137.16	16.4592	24.4944
5	12.7	1.524	2.268	55	139.7	16.764	24.948
6	15.24	1.8288	2.7216	56	142.24	17.0688	25.4016
7	17.78	2.1336	3.1752	57	144.78	17.3736	25.8552
8	20.32	2.4384	3.6288	58	147.32	17.6784	26.3088
9	22.86	2.7432	4.0824	59	149.86	17.9832	26.7624
10	25.4	3.048	4.536	60	152.4	18.288	27.216
11	27.94	3.3528	4.9896	61	154.94	18.5928	27.6696
12	30.48	3.6576	5.4432	62	157.48	18.8976	28.1232
13	33.02	3.9624	5.8968	63	160.02	19.2024	28.5768
14	35.56	4.2672	6.3504	64	162.56	19.5072	29.0304
15	38.1	4.572	6.804	65	165.1	19.812	29.488
16	40.64	4.8768	7.2576	66	167.64	20.1168	29.9376
17	43.18	5.1816	7.7112	67	170.18	20.4216	30.3912
18	45.72	5.4864	8.1648	68	172.72	20.7264	30.8448
19	48.26	5.7912	8.6184	69	175.26	21.0312	31.2984
20	50.8	6.096	9.072	70	177.8	21.336	31.752
21	53.34	6.4008	9.5256	71	180.34	21.6408	32.2056
22	55.88	6.7056	9.9792	72	182.88	21.9456	32.6592
23	58.42	7.0104	10.4328	73	185.42	22.2504	33.1128
24	60.96	7.3152	10.8864	74	187.96	22.5552	33.5664
25	63.5	7.62	11.34	75	190.5	22.86	34.02
26	66.04	7.9248	11.7936	76	193.04	23.1648	34.4736
27	68.58	8.2296	12.2472	77	195.58	23.4696	34.9272
28	71.12	8.5344	12.7008	78	198.12	23.7744	35.3808
29	73.66	8.8392	13.1544	79	200.66	24.0792	35.8344
30	76.2	9.144	13.608	80	203.2	24.384	36.288
31	78.74	9.4488	14.0616	81	205.74	24.6888	36.7416
32	81.28	9.7536	14.5152	82	208.28	24.9936	37.1952
33	83.82	10.0584	14.9680	83	210.82	25.2984	37.6488
34	86.36	10.3632	15.4224	84	213.36	25.6032	38.1024
35	88.9	10.668	15.876	85	215.9	25.908	38.556
36	91.44	10.9728	16.3296	86	218.44	26.2128	39.0096
37	93.98	11.2776	16.7832	87	220.98	26.5176	39.4632
38	96.52	11.5824	17.2368	88	223.52	26.8224	39.9168
39	99.06	11.8872	17.6904	89	226.06	27.1272	40.3704
40	101.6	12.192	18.144	90	228.6	27.432	40.824
41	104.14	12.4968	18.5976	91	231.14	27.7368	41.2776
42	106.68	12.8016	19.0512	92	233.68	28.0416	41.7312
43	109.22	13.1064	19.5048	93	236.22	28.3464	42.1848
44	111.76	13.4112	19.9584	94	238.76	28.6512	42.6384
45	114.3	13.716	20.412	95	241.3	28.956	43.092
46	116.84	14.0208	20.8656	96	243.84	29.2608	43.5456
47	119.38	14.3256	21.3192	97	246.38	29.5656	43.9992
48	121.92	14.6304	21.7728	98	248.92	29.8704	44.4528
49	124.46	14.9352	22.2264	99	252.46	30.1752	44.9064
50	127	15.24	22.68	100	254	30.48	45.36

Standard and Metric Linear and Area Conversion Tables

Linear Conversions							
Inches	Feet	Yards	Rods	Miles	Centi-meters	Meters	Kilo-meters
1	0.083	0.028	0.005	—	2.540	0.0254	—
12	1	0.333	0.061	0.0002	30.480	0.305	0.0003
36	3	1	0.182	0.0006	91.440	0.914	0.0009
0.3937	0.033	0.011	—	—	1	0.01	—
39.37	3.281	1.094	0.199	0.0006	100	1	0.001
198	16.5	5.5	1	0.003	Furlongs	5.029	0.005
					0.025		
					8		
					1,609,347		
					1		
	5,280	1,760	320	1	201.168	0.201	
	660	220	40	0.125	1,000	1	
	3,280.83	1,093.61	198.838	0.621	4.971	1,000	1
Area Conversions							
Square Inches	Square Feet	Square Yards	Acres	Square Centi-meters	Square Meters	Hectares	Square Kilo-meters
1	0.007	—	—	6.452	0.0006	—	—
144	1	0.111	0.00002	929.034	0.093	—	—
1,296	9	1	0.0002	8,361.31	0.836	—	—
0.155	0.001	—	—	1	0.0001	—	—
1,549.997	10.764	1.196	0.0002	10,000	1	0.0001	—
				Square Miles			
				0.002			
				1			
				2,589,998			
				10,000			
	43,560	4,840	1	0.002	4,046.87	0.405	0.004
	27,878,400	3,097,600	640	1	2,589,998	258.999	2.590
	107,638.7	11,959.9	2.471	0.004	10,000	1	0.01
	10,763,867	1,195,985	247.104	0.386	1,000,000	100	1

Metric Conversions and Equivalents

B

General Conversion Factors

Multiply	By	To Obtain
acres	43,560	square feet
acres	4047	square meters
acres	1.562×10^{-3}	square miles
acres	5645.8	square varas
acres	4840	square yards
amperes	1/10	abamperes
amperes	3×10^9	statamperes
atmospheres	76.0	cms. of mercury
atmospheres	29.92	inches of mercury
atmospheres	33.90	feet of water
atmospheres	10.333	kgs. per sq. meter
atmospheres	14.70	pounds per sq. inch
atmospheres	1.058	tons per sq. foot
British thermal units	0.2520	kilogram-calories
British thermal units	777.5	foot-pounds
British thermal units	3.927×10^{-4}	horse-power-hours
British thermal units	1054	joules
British thermal units	107.5	kilogram-meters
British thermal units	2.928×10^{-4}	kilowatt-hours
B.t.u. per min.	12.96	foot-pounds per sec.
B.t.u. per min.	0.02356	horse-power
B.t.u. per min.	0.01757	kilowatts
B.t.u. per min.	17.57	watts
B.t.u. per sq. ft. per min.	0.1220	watts per sq. inch
bushels	1.244	cubic feet
bushels	2150	cubic inches
bushels	0.03524	cubic meters
bushels	4	pecks
bushels	64	pints (dry)
bushels	32	quarts (dry)
centimeters	0.3937	inches
centimeters	0.01	meters
centimeters	393.7	mils
centimeters	10	millimeters
centimeter-grams	980.7	centimeter-dynes
centimeter-grams	10^{-5}	meter-kilograms
centimeter-grams	7.233×10^{-5}	pound-feet
centimeters of mercury	0.01316	atmospheres
centimeters of mercury	0.4461	feet of water
centimeters of mercury	136.0	kgs. per sq. meter
centimeters of mercury	27.85	pounds per sq. foot
centimeters of mercury	0.1934	pounds per sq. inch
centimeters per second	1.969	feet per minute
centimeters per second	0.03281	feet per second
centimeters per second	0.036	kilometers per hour
centimeters per second	0.6	meters per minute
centimeters per second	0.02237	miles per hour
centimeters per second	3.728×10^{-4}	miles per minute
cubic centimeters	3.531×10^{-5}	cubic feet
cubic centimeters	6.102×10^{-2}	cubic inches
cubic centimeters	10^{-6}	cubic meters
cubic centimeters	1.308×10^{-6}	cubic yards
cubic centimeters	2.642×10^{-4}	gallons
cubic centimeters	10^{-3}	liters

General Conversion Factors (continued)

Multiply	By	To Obtain
cubic centimeters	2.113×10^{-3}	pints (liquid)
cubic centimeters	1.057×10^{-3}	quarts (liquid)
cubic feet	62.43	pounds of water
cubic feet	2.832×10^4	cubic cms.
cubic feet	1728	cubic inches
cubic feet	0.02832	cubic meters
cubic feet	0.03704	cubic yards
cubic feet	7.481	gallons
cubic feet	28.32	liters
cubic feet	59.84	pints (liquid)
cubic feet	29.92	quarts (liquid)
cubic feet per minute	472.0	cubic cms. per sec.
cubic feet per minute	0.1247	gallons per sec.
cubic feet per minute	0.4720	liters per second
cubic feet per minute	62.4	lbs. of water per min.
cubic inches	16.39	cubic centimeters
cubic inches	5.787×10^{-4}	cubic feet
cubic inches	1.639×10^{-5}	cubic meters
cubic inches	2.143×10^{-5}	cubic yards
cubic inches	4.329×10^{-3}	gallons
cubic inches	1.639×10^{-2}	liters
cubic inches	0.03463	pints (liquid)
cubic inches	0.01732	quarts (liquid)
cubic yards	7.646×10^5	cubic centimeters
cubic yards	27	cubic feet
cubic yards	46,656	cubic inches
cubic yards	0.7646	cubic meters
cubic yards	202.0	gallons
cubic yards	764.6	liters
cubic yards	1616	pints (liquid)
cubic yards	807.9	quarts (liquid)
cubic yards per minute	0.45	cubic feet per sec.
cubic yards per minute	3.367	gallons per second
cubic yards per minute	12.74	liters per second
degrees (angle)	60	minutes
degrees (angle)	0.01745	radians
degrees (angle)	3600	seconds
dynes	1.020×10^{-3}	grams
dynes	7.233×10^{-5}	poundals
dynes	2.248×10^{-6}	pounds
ergs	9.486×10^{-11}	British thermal units
ergs	1	dyne-centimeters
ergs	7.376×10^{-8}	foot-pounds
ergs	1.020×10^{-3}	gram-centimeters
ergs	10^{-7}	joules
ergs	2.390×10^{-11}	kilogram-calories
ergs	1.020×10^{-8}	kilogram-meters
feet	30.48	centimeters
feet	12	inches
feet	0.3048	meters
feet	.36	varas
feet	1/3	yards
feet of water	0.02950	atmospheres
feet of water	0.8826	inches of mercury

Metric Conversions and Equivalents

B

General Conversion Factors (continued)

Multiply	By	To Obtain
feet of water	304.8	kgs. per sq. meter
feet of water	62.43	pounds per sq. ft.
feet of water	0.4335	pounds per sq. inch
feet per second	30.48	centimeters per second
feet per sec. per sec.	0.3048	meters per sec. per sec.
foot-pounds	1.286×10^{-3}	British thermal units
foot-pounds	1.356×10^7	ergs
foot-pounds	5.050×10^{-7}	horse-power hours
foot-pounds	1.356	joules
foot-pounds	3.241×10^{-4}	kilogram-calories
foot-pounds	0.1383	kilogram-meters
foot-pounds	3.766×10^{-7}	kilowatt-hours
foot-pounds per min.	1.286×10^{-3}	B.t. units per minute
foot-pounds per min.	0.01667	foot-pounds per sec.
foot-pounds per min.	3.030×10^{-5}	horse-power
foot-pounds per min.	3.241×10^{-4}	kg.-calories per min.
foot-pounds per min.	2.260×10^{-5}	kilowatts
foot-pounds per sec.	7.717×10^{-2}	B.t. units per minute
foot-pounds per sec.	1.818×10^{-3}	horse-power
foot-pounds per sec.	1.945×10^{-2}	kg.-calories per min.
foot-pounds per sec.	1.356×10^{-3}	kilowatts
gallons	8.345	pounds of water
gallons	3785	cubic centimeters
gallons	0.1337	cubic feet
gallons	231	cubic inches
gallons	3.785×10^{-3}	cubic meters
gallons	4.951×10^{-3}	cubic yards
gallons	3.785	liters
gallons	8	pints (liquid)
gallons	4	quarts (liquid)
gallons per minute	2.228×10^{-3}	cubic ft. per second
gallons per minute	0.06308	liters per second
grains (troy)	1	grains (av.)
grains (troy)	0.06480	grams
grains (troy)	0.04167	pennyweights (troy)
grams	980.7	dynes
grams	15.43	grains (troy)
grams	10^{-3}	kilograms
grams	10^3	milligrams
grams	0.03527	ounces
grams	0.03215	ounces (troy)
grams	0.07093	poundals
grams	2.205×10^{-3}	pounds
horse-power	42.44	B.t. units per min.
horse-power	33,000	foot-pounds per min.
horse-power	550	foot-pounds per sec.
horse-power	1.014	horse-power (metric)
horse-power	10.70	kg.-calories per min.
horse-power	0.7457	kilowatts
horse-power	745.7	watts
horse-power (boiler)	33,520	B.t.u. per hour
horse-power (boiler)	9.804	kilowatts
horse-power-hours	2547	British thermal units
horse-power-hours	1.98×10^6	foot-pounds

General Conversion Factors (continued)

Multiply	By	To Obtain
horse-power-hours	2.684×10^6	joules
horse-power-hours	641.7	kilogram-calories
horse-power-hours	2.737×10^5	kilogram-meters
horse-power-hours	0.7457	kilowatt-hours
inches	2.540	centimeters
inches	10^3	mils
inches	.03	varas
inches of mercury	0.03342	atmospheres
inches of mercury	1.133	feet of water
inches of mercury	345.3	kgs. per sq. meter
inches of mercury	70.73	pounds per sq. ft.
inches of mercury	0.4912	pounds per sq. in.
inches of water	0.002458	atmospheres
inches of water	0.07355	inches of mercury
inches of water	25.40	kgs. per sq. meter
inches of water	0.5781	ounces per sq. in.
inches of water	5.204	pounds per sq. ft.
inches of water	0.03613	pounds per sq. in.
kilograms	980,665	dynes
kilograms	10^3	grams
kilograms	70.93	poundals
kilograms	2.2046	pounds
kilograms	1.102×10^{-3}	tons (short)
kilogram-calories	3.968	British thermal units
kilogram-calories	3086	foot-pounds
kilogram-calories	1.558×10^{-3}	horse-power-hours
kilogram-calories	4183	joules
kilogram-calories	426.6	kilogram-meters
kilogram-calories	1.162×10^{-3}	kilowatt-hours
kg.-calories per min.	51.43	foot-pounds per sec.
kg.-calories per min.	0.09351	horse-power
kg.-calories per min.	0.06972	kilowatts
kilometers	10^5	centimeters
kilometers	3281	feet
kilometers	10^3	meters
kilometers	0.6214	miles
kilometers	1093.6	yards
kilowatts	56.92	B.t. units per min.
kilowatts	4.425×10^4	foot-pounds per min.
kilowatts	737.6	foot-pounds per sec.
kilowatts	1.341	horse-power
kilowatts	14.34	kg.-calories per min.
kilowatts	10^3	watts
kilowatt-hours	3415	British thermal units
kilowatt-hours	2.655×10^6	foot-pounds
kilowatt-hours	1.341	horse-power-hours
kilowatt-hours	3.6×10^6	joules
kilowatt-hours	860.5	kilogram-calories
kilowatt-hours	3.671×10^5	kilogram-meters
$\log_{10} N$	2.303	$\log_e N$ or $\ln N$
$\log_e N$ or $\ln N$	0.4343	$\log_{10} N$
meters	100	centimeters
meters	3.2808	feet
meters	39.37	inches

Metric Conversions and Equivalents

B

General Conversion Factors (continued)

Multiply	By	To Obtain
meters	10^{-3}	kilometers
meters	10^3	millimeters
meters	1.0936	yards
miles	1.609×10^5	centimeters
miles	5280	feet
miles	1.6093	kilometers
miles	1760	yards
miles	1900.8	varas
miles per hour	44.70	centimeters per sec.
miles per hour	88	feet per minute
miles per hour	1.467	feet per second
miles per hour	1.6093	kilometers per hour
miles per hour	0.8684	knots per hour
miles per hour	26.82	meters per minute
miles per hour per sec.	44.70	cms. per sec. per sec.
miles per hour per sec.	1.467	ft. per sec. per sec.
miles per hour per sec.	1.6093	kms. per hr. per sec.
miles per hour per sec.	0.4470	M. per sec. per sec.
months	30.42	days
months	730	hours
months	43,800	minutes
months	2.628×10^6	seconds
ounces	8	drams
ounces	437.5	grains
ounces	28.35	grams
ounces	.0625	pounds
ounces per square inch.	0.0625	pounds per sq. inch
pints (dry)	33.60	cubic inches
pints (liquid)	28.87	cubic inches
pounds	444.823	dynes
pounds	7000	grains
pounds	453.6	grams
pounds	16	ounces
pounds	32.17	poundals
pounds of water	0.01602	cubic feet
pounds of water	27.68	cubic inches
pounds of water	0.1198	gallons
pounds of water per min.	2.669×10^{-4}	cubic feet per sec.
pounds per cubic foot	0.01602	grams per cubic cm.
pounds per cubic foot	16.02	kgs. per cubic meter
pounds per cubic foot	5.787×10^{-4}	pounds per cubic in.
pounds per cubic foot	5.456×10^{-9}	pounds per mil foot
pounds per square foot	0.01602	feet of water
pounds per square foot	4.882	kgs. per sq. meter
pounds per square foot	6.944×10^{-3}	pounds per sq. inch
pounds per square inch	0.06804	atmospheres
pounds per square inch	2.307	feet of water
pounds per square inch	2.036	inches of mercury
pounds per square inch	703.1	kgs. per sq. meter
pounds per square inch	144	pounds per sq. foot
quarts	32	fluid ounces
quarts (dry)	67.20	cubic inches
quarts (liquid)	57.75	cubic inches
rods	16.5	feet

General Conversion Factors (continued)

Multiply	By	To Obtain
square centimeters	1.973×10^5	circular mils
square centimeters	1.076×10^{-3}	square feet
square centimeters	0.1550	square inches
square centimeters	10^{-6}	square meters
square centimeters	100	square millimeters
square feet	2.296×10^{-5}	acres
square feet	929.0	square centimeters
square feet	144	square inches
square feet	0.09290	square meters
square feet	3.587×10^{-8}	square miles
square feet	.1296	square varas
square feet	1/9	square yards
square inches	1.273×10^6	circular mils
square inches	6.452	square centimeters
square inches	6.944×10^{-3}	square feet
square inches	10^6	square mils
square inches	645.2	square millimeters
square miles	640	acres
square miles	27.88×10^6	square feet
square miles	2.590	square kilometers
square miles	3,613,040.45	square varas
square miles	3.098×10^6	square yards
square yards	2.066×10^{-4}	acres
square yards	9	square feet
square yards	0.8361	square meters
square yards	3.228×10^{-7}	square miles
square yards	1.1664	square varas
temp. (deg. C.) + 17.8	1.8	temp. (deg. Fahr.)
temp. (deg. F.) - 32	5/9	temp. (deg. Cent.)
tons (long)	2240	pounds
tons (short)	2000	pounds
yards	.9144	meters

Metric Conversions and Equivalents

B

Approximate Comparison of Drawing Scales

Metric	Approximate English Equivalent	Usage
1:1500 (means 1 cm = 15 m)	1 in. = 100 ft.	Location plans
1:1000 (means 1 cm = 10 m)	1 in. = 80 ft.	Site plans
1:500 (means 1 cm = 5 m)	1 in. = 40 ft.	Plot plans
1:200 (means 0.5 cm = 1 m)	1/16 in. = 1 ft.	Small scale plans
1:100 (means 1 cm = 1 m)	1/8 in. = 1 ft.	Normal scale plans
1:50 (means 2 cm = 1 m)	1/4 in. = 1 ft.	Large scale plans
1:20 (means 5 cm = 1 m)	1/2 in. = 1 ft.	Sections and details
1:10 (means 10 cm = 1 m)	1 in. = 1 ft.	Details
1:8 (means 12.5 cm = 1 m)	1-1/2 in. = 1 ft.	Details
1:1 (means 1 m = 1 m)	Full size	Large details

C

Preliminary Building Size Determination

The following tables are helpful when estimating conceptually.

With basic information such as type of occupancy and number of people intended to occupy the structure, and/or rough dimensions, it is possible to calculate other needed information.

Example:

A potential client wants to know how big a building he will need and how much it will cost. All he knows at this time is that there will be approximately 75 people working in the building. To begin a conceptual estimate, some size information is needed.

Step 1: Determine the net area. Consult the "Occupancy Determinations—Net Areas" table. The table states that for each occupant, 100 S.F. (net) of office space is required. (Note that in this case all codes have the same requirements. Check your area for the code used.)

Step 2: Determine the gross area. (Net area does not include common areas, stairwells, toilet area, mechanical areas, etc.) To obtain the gross area, consult the "Floor Area Requirements" table. The *gross to net ratio* for offices is 135%. Therefore, 100 S.F. (net) x 1.35 (gross/net), or 135 square feet per person, is needed for this office building. Since we expect an occupancy of 75 persons, the total office space will be 10,125 square feet.

(Note: In some cases, such as in apartment buildings, schools, hospitals, etc., the basic information will be in unit form, such as "I want an apartment building with 50 units," or "a hospital with 200 beds," etc. In these cases, use the "Unit Gross Area" table provided. To use this table, it is necessary to know a little about the quality of the structure. If the quality is to be "above average," then the units will be larger; if they are to be of "economy" construction, then you can assume the units will be smaller. If, in the case of an apartment building, the client wants 50 units of average quality, to obtain the overall size, multiply the number of units by the median gross square footage—in this case 50 units x 860 square feet per unit or 43,000 square feet *gross area*.)

Step 3: Determine the size. A 10,000+ square foot building lends itself nicely to a 100' x 100' economical square building. If the land available does not allow for this design, adjust the dimensions to fit. You now have the basic building size and shape to start the estimate.

Preliminary Building Size Determination

C

Occupancy Determinations

Description		S.F. Required per person
		IBC
Assembly	Fixed seats*	# fixed seats
	Without fixed seats	
	Concentrated (chairs only)	7 net
	Standing space	5 net
	Unconcentrated (tables and chairs)	15 net
	Gaming floors (keno, slots, etc.)	11 gross
Educational	Classroom area	20 net
	Shops and other vocational areas	50 net
Institutional	In-patient treatment areas	240 gross
	Out-patient areas	100 gross
	Sleeping areas	120 gross
Mercantile	Areas on other floors	60 gross
	Basement and grade floor areas	30 gross
	Storage, stock, shipping areas	300 gross
Business Areas		100 gross

* The occupancy load for assembly area with fixed seats shall be determined by the number of fixed seats installed

IBC = *International Building Code*, 2006 Edition

Unit Gross Area Requirements

The figures in the table below indicate typical ranges in square feet as a function of the "occupant" unit. This table is best used in the preliminary design stages to help determine the probable size requirement for the total project. The "1/4" means that of all buildings of this type built, 1/4 will be smaller in unit size and 3/4 will be larger; "median" means that 50% of the units will be smaller and 50% will be larger; the "3/4" indicates that 3/4 of the building units will be smaller and 1/4 will be larger.

Building Type	Unit	Gross Area in S.F.		
		1/4	Median	3/4
Apartments	Unit	660	860	1,100
Auditorium & Play Theaters	Seat	18	25	38
Bowling Alleys	Lane		940	
Churches & Synagogues	Seat	20	28	39
Dormitories	Bed	200	230	275
Fraternity & Sorority Houses	Bed	220	315	370
Garages, Parking	Car	325	355	385
Hospitals	Bed	685	850	1,075
Hotels	Rental Unit	475	600	710
Housing for the Elderly	Unit	515	635	755
Housing, Public	Unit	700	875	1,030
Ice Skating Rinks	Total	27,000	30,000	36,000
Motels	Rental Unit	360	465	620
Nursing Homes	Bed	290	350	450
Restaurants	Seat	23	29	39
Schools, Elementary	Pupil	65	77	90
Junior High & Middle		85	110	129
Senior High		102	130	145
Vocational		110	135	195
Shooting Ranges	Point		450	
Theaters & Movies	Seat		15	

Preliminary Building Size Determination

C

Floor Area Ratios: Commonly Used Gross-to-Net and Net-to-Gross Area Ratios Expressed in % for Various Building Types

Building Type	Gross-to-Net Ratio	Net-to-Gross Ratio	Building Type	Gross-to-Net Ratio	Net-to-Gross Ratio
Apartment	156	64	School Buildings (campus type)		
Bank	140	72	Administrative	150	67
Church	142	70	Auditorium	142	70
Courthouse	162	61	Biology	161	62
Department Store	123	81	Chemistry	170	59
Garage	118	85	Classroom	152	66
Hospital	183	55	Dining Hall	138	72
Hotel	158	63	Dormitory	154	65
Laboratory	171	58	Engineering	164	61
Library	132	76	Fraternity	160	63
Office	135	75	Gymnasium	142	70
Restaurant	141	70	Science	167	60
Warehouse	108	93	Service	120	83
			Student Union	172	59

The gross area of a building is the total floor area based on outside dimensions.

The net area of a building is the usable floor area for the function intended and excludes such items as stairways, corridors and mechanical rooms. In the case of a commercial building, it might be considered as the "leasable area."

D

F = Future amount; the amount of money you will end up with or want to end up with at the end of the time period specified.

P = Present value; the amount of money you have or need to have at the beginning of the time period specified.

n = Number of time periods being calculated (coordinate with i).

i = Interest rate per time period. (Note: if n , the number of time periods, is in days, weeks, months or years, i must also be in that time period.)

Formulas for Compound Interest

A) $F = P(1 + i)^n$

Use: To find the value of funds at the end of the number of time periods (n) if the interest rate is i per time period. A time period is the time the interest rate is compounded. For example, if you wish to know how much you will have in an account at the end of five years and the bank compounds their rate monthly at 5% interest, then F is what you are looking for, n would equal 5 years $\times$ 4 quarters per year = 20, and i = 5% per year divided by 4 quarters per year = 1.25.

B) $P = F \left[\frac{1}{(1 + i)^n} \right] = F(1 + i)^{-n}$

Use: To find the amount needed today (present value) to end up with the desired amount F (future value) at the end of time period n , at the interest rate of i per time period.

C) Annuity Compound Amount

$$F = A \left[\frac{(1 + i)^n - 1}{i} \right]$$

Use: To find the future value of an annuity if amount A is added (or paid) to an account at regular intervals for the time period of n intervals, at interest rate of i per interval. This formula can also be used to determine what the total of all payments (principle and interest) of a loan will be.

D) Sinking Fund

$$A = F \left[\frac{i}{(1 + i)^n - 1} \right]$$

Use: To find the amount A needed to add to an account at regular intervals, to end up with a future amount F after a time period of n intervals at an interest rate of i per interval.

E) Capital Recovery (Loan Repayment)

$$A = P \left[\frac{i(1 + i)^n}{(1 + i)^n - 1} \right] = P \left[\frac{i}{1 - (1 + i)^{-n}} \right]$$

Use: To find what payments are necessary per time interval to pay back a loan P over the number of time intervals n at an interest rate of i per time interval. For example, if you wanted to find your *monthly* payment for a loan of \$100,000 spread over 30 years at a fixed rate of 10% per year, then P = \$100,000, n = 30 years $\times$ 12 months per year = 360, and i = 10%/year/12 months/year = 0.833.

F) Present Value of a Loan

$$P = A \left[\frac{((1 + i)^n - 1)}{i(1 + i)^n} \right] = A \left[\frac{1 - (1 + i)^{-n}}{i} \right]$$

Use: To find the present value of payments, if you are making payments A over a number of time intervals n at the interest rate i per time interval

Symbols

E

Lighting Outlets

	Ceiling Surface Incandescent Fixture
	Wall Surface Incandescent Fixture
	Ceiling Recess Incandescent Fixture
	Wall Recess Incandescent Fixture
	Standard Designation for All Lighting Fixtures – A = Fixture Type, 3 = Circuit Number, b = Switch Control
	Ceiling Blanked Outlet
	Wall Blanked Outlet
	Ceiling Electrical Outlet
	Wall Electrical Outlet
	Ceiling Junction Box
	Wall Junction Box
	Ceiling Lamp Holder with Pull Switch
	Wall Lamp Holder with Pull Switch
	Ceiling Outlet Controlled by Low Voltage Switching when Relay is Installed in Outlet Box
	Wall Outlet – Same as Above
	Outlet Box with Extension Ring
	Exit Sign with Arrow as Indicated
	Surface Fluorescent Fixture
	Pendant Fluorescent Fixture
	Recessed Fluorescent Fixture
	Wall Surface Fluorescent Fixture
	Channel Mounted Fluorescent Fixture
	Surface or Pendant Continuous Row Fluorescent Fixtures

	Recessed Continuous Row Fluorescent Fixtures
	Incandescent Fixture on Emergency Circuit
	Fluorescent Fixture on Emergency Circuit

Receptacle Outlets

	Single Receptacle Outlet
	Duplex Receptacle Outlet
	Duplex Receptacle Outlet "X" Indicates above Counter Max. Height = 42" or above Counter
	Weatherproof Receptacle Outlet
	Triplex Receptacle Outlet
	Quadruplex Receptacle Outlet
	Duplex Receptacle Outlet – Split Wired
	Triplex Receptacle Outlet – Split Wired
	Single Special Purpose Receptacle Outlet
	Duplex Special Purpose Receptacle Outlet
	Range Outlet
	Special Purpose Connection – Dishwasher
	Explosion-proof Receptacle Outlet Max. Height = 36" to $\mathcal{C}$
	Multi-outlet Assembly
	Clock Hanger Receptacle
	Fan Hanger Receptacle
	Floor Single Receptacle Outlet

Receptacle Outlets (Cont).

	Floor Duplex Receptacle Outlet
	Floor Special Purpose Outlet
	Floor Telephone Outlet – Public
	Floor Telephone Outlet – Private
	Underfloor Duct and Junction Box for Triple, Double, or Single Duct System as Indicated by Number of Parallel Lines
	Cellular Floor Header Duct

Switch Outlets

S	Single Pole Switch Max. Height = 42" to $\mathbb{C}$
S₂	Double Pole Switch
S₃	Three-way Switch
S₄	Four-way Switch
S_D	Automatic Door Switch
S_K	Key Operated Switch
S_P	Switch & Pilot Lamp
S_{CB}	Circuit Breaker
S_{WCB}	Weatherproof Circuit Breaker
S_{MC}	Momentary Contact Switch
S_{RC}	Remote Control Switch (Receiver)
S_{WP}	Weatherproof Switch
S_F	Fused Switch
S_L	Switch for Low Voltage Switching System
S_{LM}	Master Switch for Low Voltage Switching System
S_T	Time Switch

S_{TH} Thermal Rated Motor Switch

S_{DM} Incandescent Dimmer Switch

S_{FDM} Fluorescent Dimmer Switch

S Switch & Single Receptacle

S Switch & Double Receptacle

S_A } Special Outlet Circuits

Institutional, Commercial, & Industrial System Outlets

	Nurses Call System Devices – any Type
	Paging System Devices – any Type
	Fire Alarm System Devices – any Type
\mathbb{C} symbol: a square with the letter F inside."/>	Fire Alarm Manual Station – Max. Height = 48" to $\mathbb{C}$
	Fire Alarm Horn with Integral Warning Light
	Fire Alarm Thermodetector, Fixed Temperature
	Smoke Detector
	Fire Alarm Thermodetector, Rate of Rise
	Fire Alarm Master Box – Max. Height per Fire Department
	Magnetic Door Holder
	Fire Alarm Annunciator
	Staff Register System – any Type
	Electrical Clock System Devices – any Type
	Public Telephone System Devices

Symbols

E

Institutional, Commercial, & Industrial System Outlets (Cont).

-  Private Telephone System Devices
-  Watchman System Devices
-  Sound System, L = Speaker, V = Volume Control
-  Other Signal System Devices – CTV = Television Antenna, DP = Data Processing
-  Signal Central Station
-  Telephone Interconnection Box
-  Pneumatic/Electric Switch
-  Electric/Pneumatic Switch
-  Operating Room Grounding Plate
-  Patient Ground Point – 6 = Number of Jacks

Panelboards

-  Flush Mounted Panelboard & Cabinet
-  Surface Mounted Panelboard & Cabinet
-  Lighting Panel
-  Power Panel
-  Heating Panel
-  Controller (Starter)
-  Externally Operated Disconnect Switch

Busducts & Wireways

-  Trolley Duct
-  Busway (Service, Feeder, or Plug-in)
-  Cable through Ladder or Channel

 Wireway

 Bus Duct Junction Box

Electrical Distribution or Lighting System, Aerial, Lightning Protection

-  Pole
-  Street Light & Bracket
-  Transformer
-  Primary Circuit
-  Secondary Circuit
-  Auxiliary System Circuits
-  Down Guy
-  Head Guy
-  Sidewalk Guy
-  Service Weather Head
-  Lightning Rod
-  Lightning Protection System Conductor

Residential Signaling System Outlets

-  Push Button
-  Buzzer
-  Bell
-  Bell and Buzzer Combination
-  Annunciator
-  Outside Telephone
-  Interconnecting Telephone
-  Telephone Switchboard
-  Bell Ringing Transformer

Residential Signaling System Outlets (Cont).

-  Electric Door Opener
-  Maid's Signal Plug
-  Radio Antenna Outlet
-  Chime
-  Television Antenna Outlet
-  Thermostat

Underground Electrical Distribution or Lighting System

-  Manhole
-  Handhole
-  Transformer – Manhole or Vault
-  Transformer Pad
-  Underground Direct Burial Cable
-  Underground Duct Line
-  Street Light Standard Fed from Underground Circuit

Panel Circuits & Miscellaneous

-  Conduit Concealed in Floor or Walls
-  Wiring Exposed
-  Home Run to Panelboard – Number of Arrows Indicate Number of Circuits
-  Home Run to Panelboard – Two-Wire Circuit
-  Home Run to Panelboard – Number of Slashes Indicate Number of Wires (When more than Two)
-  Home Run to Panelboard – 'LS' Indicates Panel Designation; L1, 3, 5, Indicates Circuit Breaker No.

-  Clock Circuit, Conduit and Wire
-  Emergency Conduit and Wiring
-  Telephone Conduit and Wiring
-  Feeders
-  Conduit Turned Up
-  Conduit Turned Down
-  Generator
-  Motor
-  Motor – Numeral Indicates Horsepower
-  Instrument (Specify)
-  Transformer
-  Remote Start-Stop Push Button Station
-  Remote Start-Stop Push Button Station w/Pilot Light
-  Electric Heater Wall Unit

Common Abbreviations on Drawings

- EWC** Electric Water Cooler
- EDH** Electric Duct Heater
- AFF** Above Finished Floor
- UH** Unit Heater
- GFI** Ground Fault Interrupter
- GFP** Ground Fault Protector
- GFCB** Ground Fault Circuit Breaker
- EC** Empty Conduit
- WP** Weatherproof
- VP** Vaporproof

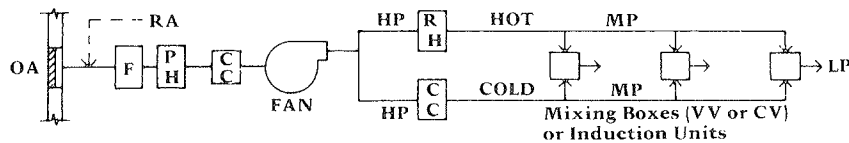
Symbols

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HVAC Ductwork Symbols

Supply Duct			Automatic Damper
Return/Exhaust Duct			
Duct-First Number is Side Shown			Fire Damper
Direction of Flow			Volume Damper
Lined Ductwork			
Inclined Drop in Direction of Air Flow			Smoke Damper
Inclined Rise in Direction of Air Flow			
Canvas Connection			
Access Door			Supply Outlet Ceiling Diffuser
Intake Louver & Screen			Linear Diffuser
Exhaust Louver			
Splitter Damper			
Round Elbow Turning Vanes			Round Elbow
			Square Elbow
			Square Elbow Turning Vanes

Double Duct Air System



OA = Outside Air
RA = Return Air
F = Filter
PH = Preheat Coil

CC = Cooling Coil
RH = Reheat Coil
HP = High Pressure Duct
MP = Medium Pressure Duct

LP = Low Pressure Duct
VV = Variable Volume
CV = Constant Volume

HVAC				
Valves, Fittings & Specialties	Gate		Up/Dn 	Pipe Pitch Up or Down
	Globe			Expansion Joint
	Check			Expansion Loop
	Butterfly			Flexible Connection
	Solenoid			Thermostat
	Lock Shield			Thermostatic Trap
	2-Way Automatic Control			Float and Thermostatic Trap
	3-Way Automatic Control			Thermometer
	Gas Cock			Pressure Gauge
	Plug Cock			Flow Switch
	Flanged Joint			Pressure Switch
	Union			Pressure Reducing Valve
	Cap			Humidistat
	Strainer			Aquastat
	Concentric Reducer			Air Vent
	Eccentric Reducer			Meter
	Pipe Guide			Elbow
	Pipe Anchor			Tee
	Elbow Looking Up			
	Elbow Looking Down			
	Flow Direction			

Symbols

E

HVAC

Hot Water Heating Supply — HWS —
 Hot Water Heating Return — HWR —
 Chilled Water Supply — CHWS —
 Chilled Water Return — CHWR —
 Drain Line — D —
 City Water — CW —
 Fuel Oil Supply — FOS —
 Fuel Oil Return — FOR —
 Fuel Oil Vent — FOV —

HVAC

— FOG —
 — PD —
 — — — — —
 — LPS —
 — MPS —
 — HPS —
 — BD —

HVAC (Cont.)

Fuel Oil Gauge Line Pump Discharge
 Low Pressure Condensate Return
 Low Pressure Steam
 Medium Pressure Steam
 High Pressure Steam
 Boiler Blow-Down

Piping Symbols

Valves,
Fittings, &
Specialties

Gate



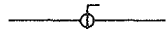
Globe



Check



Butterfly



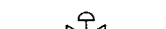
Solenoid



Lock Shield



2-Way
Automatic
Control



3-Way
Automatic
Control



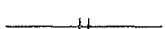
Gas Cock



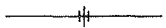
Plug Cock



Flanged
Joint



Union



Cap



Strainer



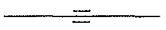
Concentric
Reducer



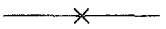
Eccentric
Reducer



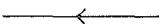
Pipe Guide



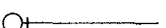
Pipe Anchor



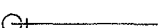
Flow Direction



Elbow
Looking Up



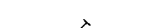
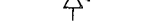
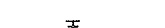
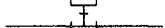
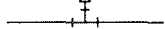
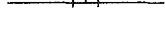
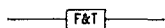
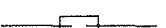
Elbow
Looking Down



Pipe Pitch
Up or Down



Expansion
Joint



Expansion
Loop

Flexible
Connection

Thermostat

Thermostatic
Trap

Float and
Thermostatic
Trap

Thermometer

Pressure
Gauge

Flow
Switch

Pressure
Switch

Pressure
Reducing
Valve

Temperature
and Pressure
Relief Valve

Humidistat

Aquastat

Air Vent

Meter

Hose Bibb

Elbow

Tee

Y

OS & Y
Gate

Valves,
Fittings, &
Specialties
(Cont.)

Symbols

E

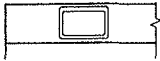
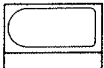
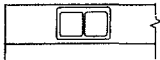
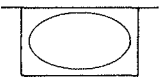
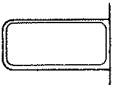
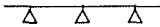
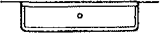
Piping Symbols (Cont.)

Valves, Fittings, & Specialties (Cont.)					Valves, Fittings, & Specialties (Cont.)
Shock Absorber		— — — — — CW	Cold Water		
House Trap		— — — — — HW	Hot Water		
'P' Trap		— — — — — HWC	Hot Water Circulation		
Floor Drain		— — — — — DWS	Drinking Water Supply		
Indirect Waste	— — — — — IW	— — — — — DWR	Drinking Water Return		
Sanitary Below Grade	— — — — — S	— — — — — G	Gas—Low Pressure		
Sanitary Above Grade	— — — — — S	— — — — — MG	Gas—Medium Pressure		
Storm Below Grade	— — — — — ST	— — — — — HG	Gas—High Pressure		
Storm Above Grade	— — — — — ST	— — — — — CA	Compressed Air		
Vent	— — — — —	— — — — — V	Vacuum		
Combination Waste & Vent	— — — — — CWV	— — — — — VC	Vacuum Cleaning		
Acid Waste Below Grade	— — — — — AW	— — — — — N	Nitrogen		
Acid Waste Above Grade	— — — — — AW	— — — — — N ₂ O	Nitrous Oxide		
Acid Vent	— — — — — AV	— — — — — O	Oxygen		
		— — — — — LOX	Liquid Oxygen		
		— — — — — LPG	Liquid Petroleum Gas		

Fire Protection Piping Symbols

Fire Protection Water Supply	— — — — — F		Fire Hydrant
Wet Standpipe	— — — — — WSP		Wall Fire Dept. Connection
Dry Standpipe	— — — — — DSP		Sidewalk Fire Dept. Connection
Combination Standpipe	— — — — — CSP		Fire Hose Rack
Automatic Fire Sprinkler	— — — — — SP		Surface Mounted Fire Hose Cabinet
Upright Fire Sprinkler Heads			Recessed Fire Hose Cabinet
Pendent Fire Sprinkler Heads			

Plumbing Fixture Symbols

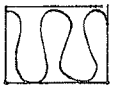
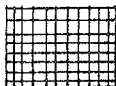
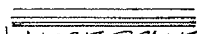
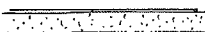
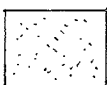
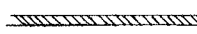
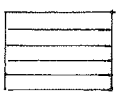
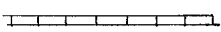
Baths	Corner			Single Basin	Kitchen Sinks
	Recessed			Twin Basin	
	Angle			Single Drainboard	
	Whirlpool			Double Drainboard	
	Institutional or Island				Dishwasher
Showers	Stall			Floor or Wall	Drinking Fountains or Electric Water Coolers
	Corner Stall			Recessed	
	Wall Gang			Semi-Recessed	Laundry Trays
Water Closets	Tank			Single	
	Flush Valve			Double	Service Sinks
	Bidet			Wall	
Urinals	Wall			Floor	Wash Fountains
	Stall			Circular	
	Trough			Semi-Circular	
Lavatories	Vanity			Heater	Hot Water
	Wall			Tank	Separators
	Counter			Gas	
	Pedestal			Oil	

Symbols

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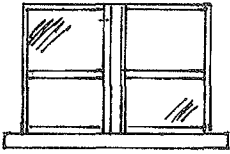
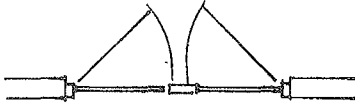
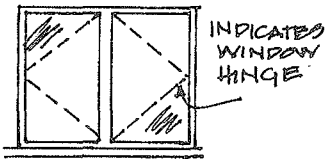
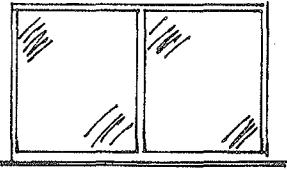
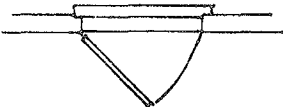
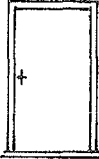
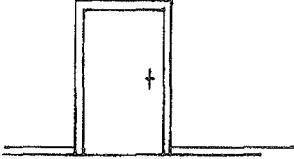
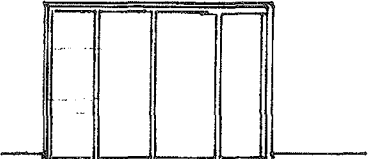
Material Indication Symbols

MATERIAL INDICATION SYMBOLS			
MATERIAL	PLAN	ELEVATION	SECTION
EARTH	NONE	NONE	
POROUS FILL	NONE	NONE	
CONCRETE			SAME AS PLAN
BRICK			SAME AS PLAN
CONCRETE BLOCK			SAME AS PLAN
STONE	 CUT STONE RUBBLE	 CUT STONE RUBBLE	SAME AS PLAN
STEEL		NONE	
FRAMING WOOD	 WALL OR PARTITION	 SIDING FINISH WOOD	 BLOCKING FRAMING
PLYWOOD	INDICATED BY NOTE	INDICATED BY NOTE	
SHEET METAL FLASHING	INDICATED BY NOTE		 SHAPED HEAVY LINE

MATERIAL INDICATION SYMBOLS			
MATERIAL	PLAN	ELEVATION	SECTION
BATT INSULATION		NONE	SAME AS PLAN
RIGID INSULATION		NONE	SAME AS PLAN
GLASS			SMALL SCALE  LARGE SCALE
GYP SUM WALL BOARD			SAME AS PLAN
ACOUSTICAL TILE		NONE	
CERAMIC WALL TILE			SAME AS PLAN
FLOOR TILE		NONE	

Symbols

E

WINDOW AND DOOR SYMBOLS		
TYPE	PLAN	ELEVATION
DOUBLE HUNG WINDOWS		
CASEMENT WINDOW		
SLIDER		
EXTERIOR DOOR		
INTERIOR DOOR		
BIFOLD DOOR		

F

Adhesive and Sealant Council (ASC)

7101 Wisconsin Ave. Suite 990
Bethesda, MD 20814
(301) 986-9700
www.ASCouncil.org

Advisory Council on Historic Preservation (ACHP)

1100 Pennsylvania Avenue, NW
Suite 803
Washington, DC 20004
(202) 606-8503
www.achp.gov

Air and Waste Management Association (AWMA)

One Gateway Center, Third Floor
Pittsburgh, PA 15222-1435
(412) 232-3444
www.awma.org

Air Conditioning Contractors of America (ACCA)

2800 Shirlington Road, Ste. 300
Arlington, VA 22206
(703) 575-4477
www.acca.org

Air Conditioning, Heating and Refrigeration Institute (ARI)

2111 Wilson Boulevard, Ste. 500
Arlington, VA 22201
(703) 524-8800
www.ahrinet.org

Alliance for the Polyurethanes Industry (API)

1300 Wilson Boulevard
Arlington, VA 22209
(202) 947-5325
www.polyurethane.org

Alliance to Save Energy (ASE)

1850 M Street, NW, Ste. 600
Washington, DC 20036
(202) 857-0666
www.ase.org

Aluminum Association (AA)

1525 Wilson Blvd., Ste. 600
Arlington, VA 22209
(703) 358-2960
www.aluminum.org

American Architectural Manufacturers Association (AAMA)

1827 Walden Office Square, Suite 550
Schaumburg, IL 60173-4268
(847) 303-5664
www.aamanet.org

American Association of State Hwy. & Trans. Officials (AASHTO)

444 North Capitol Street, NW
Suite 249
Washington, DC 20001
(202) 624-5800
www.aashto.org

American Ceramics Society (ACS)

600 N. Cleveland Ave., Ste. 210
Westerville, OH 43082
(240) 646-7054
www.ceramics.org

American Concrete Institute (ACI)

38800 Country Club Drive
Farmington Hills, MI 48331
(248) 848-3700
www.concrete.org

American Concrete Pavement Association (ACPA)

500 New Jersey Ave., NW, 7th Floor
Washington, DC 20001
(202) 638-2272
www.acpa.org

American Concrete Pipe Association (ACPA)

1303 W. Walnut Hill Lane, Ste. 305
Irving, TX 75038-3008
(972) 506-7216
www.concrete-pipe.org

American Consulting Engineers Council (ACEC)

1015 15th Street, NW, 8th Floor
Washington, DC 20005-2605
(202) 347-7474
www.acec.org

American Council for an Energy-Efficient Economy (ACEEE)

529 14th Street, SW, Ste. 600
Washington, DC 20045-1000
(202) 507-4000
www.aceee.org

American Design & Drafting Association (ADDA)

105 E. Main Street
Newbern, TN 38059
(731) 627-0802
www.adda.org

American Fire Sprinkler Association (AFSA)

12750 Merit Drive, Ste. 350
Dallas, TX 75251
(214) 349-5965
www.firesprinkler.org

American Hardware Manufacturers Association (AHMA)

801 North Plaza Drive
Schaumburg, IL 60173
(847) 605-1025
www.ahma.org

The American Institute of Architects (AIA)

1735 New York Avenue, NW
Washington, DC 20006-5292
(202) 626-7300
www.aia.org

Professional Associations

F

American Institute of Building Design (AIBD)

7059 Blair Road, SW, Ste. 201
Washington, DC 20001
(800) 366-2423
www.aibd.org

American Institute of Steel Construction (AISC)

One E. Wacker Drive, Ste. 700
Chicago, IL 60601-1802
(312) 670-5403
www.aisc.org

American Institute of Timber Construction (AITC)

7012 S. Revere Parkway, Suite 140
Englewood, CO 80112
(303) 792-9559
www.aitc-glulam.org

American Iron and Steel Institute (AISI)

1140 Connecticut Ave., NW
Washington, DC 20036
(202) 452-7100
www.steel.org

American Lumber Standards Committee (ALSC)

P.O. Box 210
Germantown, MD 20875
(301) 972-1700
www.alsc.org

American National Standards Institute (ANSI)

1819 L Street, NW, Ste. 600
Washington, DC 20036
(202) 293-8020
www.ansi.org

American Planning Association (APA)

1776 Massachusetts Avenue, NW
Ste. 400
Washington, DC 20036-1904
(202) 872-0611
www.planning.org

American Road and Transportation Builders Association (ARTBA)

1219 28th Street NW
Washington, DC 20009-3389
(202) 289-4434
www.artba.org

American Society for Nondestructive Testing (ASNT)

P.O. Box 28518, 1711 Arlington Lane
Columbus, OH 43228-0518
(800) 222-2768
www.asnt.org

ASTM International

100 Barr Harbor Drive
P.O. Box C700
West Conshohocken, PA 19428-2959
(610) 832-9500
www.astm.org

American Society of Civil Engineers (ASCE)

1801 Alexander Bell Drive
Reston, VA 20191
(800) 548-2723
www.asce.org

American Society of Heating Refrigerating and Air Engineers (ASHRAE)

1791 Tullie Circle, NE
Atlanta, GA 30329
(404) 636-8400
www.ashrae.org

American Society of Interior Designers (ASID)

608 Massachusetts Avenue, NE
Washington, DC 20002-6006
(202) 546-3480
www.asid.org

American Society of Mechanical Engineers (ASME)

Three Park Avenue
New York, NY 10016-5990
(800) 843-2763
www.asme.org

American Society of Plumbing Engineers (ASPE)

8614 Catalpa Ave., Ste 1007
Chicago, IL 60656-1116
(773) 693-2773
www.aspe.org

American Society of Professional Estimators (ASPE)

675 S. Washington Street
Alexandria, VA 22314-4109
(877) 273-5679
www.aspenational.com

American Society of Sanitary Engineering (ASSE)

901 Canterbury, Ste. A
Westlake, OH 44145
(440) 835-3040
www.asse-plumbing.org

American Subcontractors Association (ASA)

1004 Duke Street
Alexandria, VA 22314-3588
(703) 684-3450
www.asaonline.com

American Welding Society (AWS)

550 NW LeJeune Road
Miami, FL 33126
Phone (800) 443-9353
www.aws.org

American Wood Council (AWC)

1111 Nineteenth Street, NW
Suite 800
Washington, DC 20036
(202) 463-2766
www.awc.org

Professional Associations

American Wood Preservers Institute (AWPI)

2750 Prosperity Avenue, Suite 550
Fairfax, VA 22031-4312
(800) 356-2974
www.awpa.org

Architectural Woodwork Institute (AWI)

96179 Westlake Dr., Ste. 120
Potomac Falls, VA 20165
(571) 32733-3636
www.awinet.org

Asphalt Institute (AI)

2696 Research Park Drive
Lexington, KY 40511-8480
(859) 288-4960
www.asphaltinstitute.org

Asphalt Roofing Manufacturers Association (ARMA)

750 National Press Building
529 14th Street, NW
Washington, DC 20045
(202) 207-0917
www.asphaltroofing.org

Associated Builders & Contractors (ABC)

4250 N. Fairfax Dr., 9th Floor
Arlington, VA 22203-1607
(703) 812-2000
www.abc.org

Association for the Advancement of Cost Engineering (AACE)

209 Prairie Avenue, Suite 100
Morgantown, WV 26501-5934
(800) 858-2678
www.aacei.org

Association for Facilities Engineering (AFE)

12801 Worldgate Dr., Ste. 500
Herndon, VA 20170
(571) 203-7171
www.afe.org

Association of Energy Engineers (AEE)

4025 Pleasantdale Road, Suite 420
Atlanta, GA 30340
(770) 447-5083
www.aeecenter.org

The Association of Higher Education Facilities Officers (APPA)

1643 Prince Street
Alexandria, VA 22314
(703) 684-1446
www.appa.org

Association of Iron & Steel Technology (AIST)

186 Thorn Hill Road
Warrendale, PA 15086
(724) 814-3000
www.aist.org

Association of the Wall & Ceiling Industry-International (AWCI)

513 W. Broad St., Ste. 210
Falls Church, VA 22046
(703) 534-1600
www.awci.org

Brick Industry Association (BIA)

1850 Centennial Park Dr., Ste. 301
Reston, VA 20191
(703) 620-0010
www.bia.org

Building Owners and Managers Association International (BOMA)

1101 15th Street, NW
Suite 800
Washington, DC 20005
(202) 408-2662
www.boma.org

Building Service Contractors Association International (BSCAI)

401 N. Michigan Ave., 22nd Floor
Chicago, IL 60611
(800) 368-3414
www.bscai.org

California Redwood Association (CRA)

405 Enfrente Drive, Suite 200
Novato, CA 94949
(888) 225-7339
www.calredwood.org

Canadian Standards Association (CSA)

178 Rexdale Boulevard
Etobicoke (Toronto), Ontario M9W 1R3
(416) 747-4000
www.csa.ca

Cast Stone Institute (CSI)

813 Chestnut Street
Lebanon, PA 17042
(717) 272-3744
www.caststone.org

Cedar Shake & Shingle Bureau (CSSB)

P.O. Box 1178
Sumas, WA 98295-1178
(604) 820-7700
www.cedarbureau.org

Ceilings & Interior Systems Construction Association (CISCA)

405 Illinois Ave., Unit 2B
St. Charles, IL 60174
(630) 584-1919
www.cisca.org

Cellulose Insulation Manufacturers Association (CIMA)

136 South Keowee Street
Dayton, OH 45402
(937) 222-2462
www.cellulose.org

Concrete Reinforcing Steel Institute (CRSI)

933 N. Plum Grove Road
Schaumburg, IL 60173-4758
(847) 517-1200
www.crsi.org

Professional Associations

F

Concrete Sawing & Drilling Association (CSDA)

11001 Danka Way, N, Ste. 1
St. Petersburg, FL 33716
(727) 577-5004
www.csda.org

Construction Financial Management Association (CFMA)

29 Emmons Drive, Suite F-50
Princeton, NJ 08540
(609) 452-8000
www.cfma.org

Construction Specifications Canada (CSC)

120 Carlton Street, Ste. 312
Toronto, Ontario M5A 4K2
(416) 777-2198
www.csc-dcc.ca

Construction Specifications Institute (CSI)

99 Canal Center Plaza, Suite 300
Alexandria, VA 22314
(800) 689-2900
www.csinet.org

Design-Build Institute of America (DBIA)

1100 H Street, NW
Suite 500
Washington, DC 20005-5476
(202) 682-0110
www.dbia.org

Door and Hardware Institute (DHI)

14150 Newbrook Drive, Suite 200
Chantilly, VA 20151
(703) 222-2010
www.dhi.org

The Engineered Wood Association (APA)

7011 S. 19th Street
Tacoma, WA 98466-5333
(253) 565-6600
www.apawood.org

Environmental Protection Agency (EPA)

USEPA Ariel Rios Building
1200 Pennsylvania Ave., NW
Washington, DC 20004
(202) 272-0167
www.epa.gov

Forest Products Society (FPS)

2801 Marshall Court
Madison, WI 53705-2295
(608) 231-1361
www.forestprod.org

Forging Industry Association (FIA)

25 W. Prospect Avenue, Suite 300
Cleveland, OH 44115
(216) 781-6260
www.forging.org

Gypsum Association (GA)

6525 Belcrest Road, Ste. 480
Hyattsville, MD 20782
(301) 277-8747
www.gypsum.org

Hardwood Plywood & Veneer Association (HPVA)

1825 Michael Faraday Dr.
Reston, VA 20190
(703) 435-2900
www.hpva.org

Illuminating Engineering Society (IESNA)

120 Wall Street, 17th Floor
New York, NY 10005-4001
(212) 248-5000
www.ies.org

Industrial Fasteners Institute (IFI)

6363 Oak Tree Blvd.
Independence, OH 44131
(216) 241-1482
www.industrial-fasteners.org

Institute of Electrical & Electronics Engineers (IEEE)

3 Park Avenue, 17th Floor
New York, NY 10016-5997
(212) 419-7900
www.ieee.org

Institute of Noise Control Engineering (INCE)

P.O. Box 3206 Arlington Branch
Poughkeepsie, NY 12603
(914) 462-4006
www.ince.org

Institute of Transportation Engineers (ITE)

1099 14th Street NW, Ste 300W
Washington, DC 20005-3438
(202) 289-0222
www.ite.org

Insulated Cable Engineers Association, Inc. (ICEA)

P.O. Box 1568
Carrollton, GA 30112
www.icea.net

Insulated Steel Door Institute (ISDI)

30200 Detroit Road
Cleveland, OH 44145-1967
(216) 899-0010
www.isdi.org

Insulation Contractors Association of America (ICAA)

1321 Duke Street, Suite 303
Alexandria, VA 22314-3563
(703) 739-0356
www.insulate.org

The International Association of Foundation Drilling (ADSC)

14180 Dallas Parkway Suite 510
Dallas, TX 75254
(214) 343-2091
www.adsc-iafd.com

**International Association of
Plumbing and Mechanical Officials
(IAPMO)**

5001 E. Philadelphia Street
Ontario, CA 91761
(909) 472-4100
www.iapmo.org

**International Cast Polymer Alliance
(ICPA)**

1010 N. Glebe Rd., Ste. 450
Arlington, VA 22201
(703) 505-0320
www.icpa-hq.org

International Code Council (ICC)

500 New Jersey Ave., NW, 6th Floor
Washington, DC 20001-2070
(888) 422-7233
www.iccsafe.org

International Code Council (ICC)

500 New Jersey Ave., NW
6th Floor
Washington, DC 20001-2070
(888) 422-7233
www.iccsafe.org

**International Facility Management
Association (IFMA)**

One E. Greenway Plaza, Suite 1100
Houston, TX 77046-0194
(713) 623-4362
www.ifma.org

**International Interior Design
Association (IIDA)**

222 Merchandise Mart, Ste. 567
Chicago, IL 60654
(888) 799-4432
www.iida.org

**International Masonry Institute
(IMI)**

The James Brice House
42 East Street
Annapolis, MD 21401
(410) 280-1305
www.imiweb.org

**International Organization for
Standardization (ISO)**

1, ch. de la Voie-Creuse
Case Postale 56
CH-1211 Geneva 20, Switzerland
41+22 749 01 11
www.iso.ch

**Kitchen Cabinet Manufacturers
Association (KCMA)**

1899 Preston White Drive
Reston, VA 20191-5435
(703) 264-1690
www.kcma.org

**Maple Flooring Manufacturers
Association, Inc. (MFMA)**

111 Deer Lake Road, Ste. 100
Deerfield, IL 60015
(888) 480-9138
www.maplefloor.org

Marble Institute of America (MIA)

28901 Clemens Rd., Ste. 100
Cleveland, OH 44145
(440) 250-9222
www.marble-institute.com

The Masonry Society (TMS)

3970 Broadway, Suite 201-D
Boulder, CO 80304-1135
(303) 939-9700
www.masonrysociety.org

**Mechanical Contractors Association
of America (MCAA)**

1385 Piccard Drive
Rockville, MD 20850
(301) 869-5800
www.mcaa.org

**National Asphalt Pavement
Association (NAPA)**

5100 Forbes Boulevard
Lanham, MD 20706-4413
(888) 468-6499
www.hotmix.org

**National Association of
Architectural Metal Manufacturers
(NAAMM)**

800 Roosevelt Rd.
Bldg. C, Ste. 312
Glen Ellyn, IL 60137
(630) 942-6591
www.naamm.org

**National Demolition Association
(NDA)**

16 N. Franklin Street, Suite 203
Doylestown, PA 18901
(800) 541-2412
www.demolitionassociation.com

**National Association of Home
Builders (NAHB)**

1201 15th Street, NW
Washington, DC 20005
(800) 368-5242
www.nahb.com

**National Association of Housing &
Redevelopment Officials (NAHRO)**

630 Eye Street, NW
Washington, DC 20001
(877) 866-2476
www.nahro.org

**National Association of Women in
Construction (NAWIC)**

327 S. Adams Street
Fort Worth, TX, 76104
(800) 552-3506
www.nawic.org

**National Building Granite Quarries
Association, Inc. (NBGQA)**

1220 L. Street, NW, Suite 100-167
Washington, DC 20005
(800) 557-2848
www.nbgqa.com

Professional Associations

F

National Clay Pipe Institute (NCPI)

P.O. Box 759
Lake Geneva, WI 53147
(262) 248-9094
www.ncpi.org

National Concrete Masonry Association (NCMA)

13750 Sunrise Valley Drive
Herndon, VA 20171-4662
(703) 713-1900
www.ncma.org

National Electrical Contractors Association (NECA)

Three Bethesda Metro Center
Suite 1100
Bethesda, MD 20814
(301) 657-3110
www.necanet.org

National Electrical Manufacturers Association (NEMA)

1300 North 17th Street, Suite 1752
Rosslyn, VA 22209
(703) 841-5900
www.nema.org

National Fenestration Rating Council (NFRC)

6305 Ivy Lane, Ste. 140
Greenbelt, MD 20770
(301) 589-6372
www.nfrc.org

National Fire Protection Association (NFPA)

1 Batterymarch Park
Quincy, MA 02169-7471
(617) 770-3000
www.nfpa.org

National Fire Sprinkler Association (NFSA)

40 Jon Barrett Road
Patterson, NY 12563
(845) 878-4200
www.nfsa.org

National Glass Association (NGA)

8200 Greensboro Dr., Ste. 302
McLean, VA 22102-3881
(866) 342-5642
www.glass.org

National Hardwood Lumber Association (NHLA)

P.O. Box 34518
Memphis, TN 38184
(901) 377-1818
www.natllhardwood.org

National Institute of Building Sciences (NIBS)

1090 Vermont Avenue, NW, Suite 700
Washington, DC 20005-4905
(202) 289-7800
www.nibs.org

National Institute of Standards and Technology (NIST)

100 Bureau Dr., Stop 1070
Gaithersburg, MD 20899-1070
(301) 975-6478
www.nist.gov

National Insulation Association (NIA)

12100 Sunset Hills Rd., Ste. 330
Reston, VA 20190
(703) 464-6422
www.insulation.org

National Kitchen and Bath Association (NKBA)

687 Willow Grove Street
Hackettstown, NJ 07840-9988
(800) THE-NKBA
www.nkba.org

National Oak Flooring Manufacturers Association (NOFMA)

22 N. Front St., Ste. 1080
Memphis, TN 38103
(901) 526-5016
www.nofma.org

National Paint & Coatings Association (NPCA)

1500 Rhode Island Avenue, NW
Washington, DC 20005
(202) 462-6272
www.paint.org

National Precast Concrete Association (NPCA)

10333 North Meridian Street
Suite 272
Indianapolis, IN 46290
(800) 366-7731
www.precast.org

National Ready Mixed Concrete Association (NRMCA)

900 Spring Street
Silver Spring, MD 20910
(888) 846-7622
www.nrmca.org

National Roofing Contractors Association (NRCA)

10255 W. Higgins Road, Suite 600
Rosemont, IL 60018-5607
(847) 299-9070
www.nrca.net

National Safety Council (NSC)

1121 Spring Lake Drive
Itasca, IL 60143-3201
(800) 621-7615
www.nsc.org

National Sash & Door Jobbers Association (NSDJA)

10047 Robert Trent Parkway
New Port Richey, FL 34655-3649
(727) 372-3665
www.nsdja.com

National Society of Professional Engineers (NSPE)

1420 King Street
Alexandria, VA 22314-2794
(703) 684-2800
www.nspe.org

National Stone, Sand and Gravel Association (NSSA)

1605 King Street
Alexandria, VA 22314
(703) 525-8788
www.nssga.org

National Terrazzo & Mosaic Association, Inc. (NTMA)

201 N. Maple, Ste. 208
Purcellville, VA 20132
(800) 323-9736
www.ntma.com

National Trust for Historic Preservation (NTHP)

1785 Massachusetts Ave, NW
Washington, DC 20036-2117
(800) 944-6847
www.preservationnation.org

North American Insulation Manufacturers Association (NAIMA)

44 Canal Center Plaza, Ste. 310
Alexandria, VA 22314
(703) 684-0084
www.naima.org

Northeastern Lumber Manufacturers Association (NELMA)

P.O. Box 87A
Cumberland Center, ME 04021
(207) 829-6901
www.nelma.org

Pacific Lumber Inspection Bureau (PLIB)

1010 S. 336th St., Ste. 300
Federal Way, WA 98003
(253) 835-3344
www.plib.org

Plastic Pipe & Fittings Association (PPFA)

800 Roosevelt Road, Building C
Ste. 312
Glen Ellyn, IL 60137
(630) 858-6540
www.ppfa.com

Plumbing and Drainage Institute (PDI)

800 Turnpike St., Ste. 300
North Andover, MA 01845
(800) 589-8956
www.pdionline.org

Plumbing Heating Cooling Contractors Association (PHCC)

180 S. Washington Street
Falls Church, VA 22040
(800) 533-7694
www.phccweb.org

Polyisocyanurate Insulation Manufacturers Association (PIMA)

7315 Wisconsin Ave., Ste. 400E
Bethesda, MD 20814
(301) 654-0000
www.pima.org

Portland Cement Association (PCA)

5420 Old Orchard Road
Skokie, IL 60077
(847) 966-6200
www.cement.org

Post Tensioning Institute (PTI)

3880 Country Club Drive
Farmington Hills, MI 48331
(248) 848-3180
www.post-tensioning.org

Precast/Prestressed Concrete Institute (PCI)

209 W. Jackson Boulevard, Ste. 500
Chicago, IL 60606
(312) 786-0300
www.pci.org

Professional Construction Estimators Association of America (PCEA)

P.O. Box 680336
Charlotte, NC 28216
(877) 521-7232
www.pcea.org

Professional Women in Construction (PWC)

315 East 56th Street
New York, NY 10022
(212) 486-7745
www.pwcusa.org

Property Management Association (PMA)

7508 Wisconsin Avenue, 4th floor
Bethesda, MD 20814
(301) 657-9200
www.pma-dc.org

Radiant Panel Association (RPA)

P.O. Box 717
Loveland, CO 80539
(800) 660-7187
www.radiantpanelassociation.org

The Redwood Inspection Service (RIS)

818 Grayson Road, Ste. 201
Pleasant Hill, CA 94523
(925) 935-1499
www.redwoodinspection.com

Resilient Floor Covering Institute (RFCI)

115 Broad Street, Ste. 201
LaGrange, GA 30240
(706) 882-3833
www.rfci.com

Roofing Industry Educational Institute (RIEI)

10255 W. Higgins Rd., Ste. 600
Rosemont, IL 60018
(847) 299-9070
www.nrca.net

Rubber Manufacturers Association (RMA)

1400 K Street, NW
Ste. 900
Washington, DC 20005
(202) 682-4800
www.rma.org

Professional Associations

F

Sealant, Waterproofing & Restoration Institute (SWRI)

400 Admiral Blvd.
Kansas City, MO 64106
(816) 472-7974
www.swrionline.org

Sheet Metal & Air Conditioning Contractors National Association (SMACNA)

4201 Lafayette Center Drive
Chantilly, VA 20151-1209
(703) 803-2980
www.smacna.org

Single Ply Roofing Institute (SPRI)

411 Waverly Oaks Rd., Ste. 331B
Waltham, MA 02452
(781) 647-7026
www.spri.org

Society of Fire Protection Engineers (SFPE)

7315 Wisconsin Ave., Ste. 620E
Bethesda, MD 20814
(301) 718-2910
www.sfpe.org

Society of Plastics Engineers (SPE)

13 Church Hill Road
Newtown, CT 06470
(203) 775-0471
www.4spe.org

The Plastics Industry Trade Association (SPI)

1667 K Street, NW
Ste. 1000
Washington, DC 20006
(202) 974-5200
www.plasticsindustry.org

Society of Women Engineers (SWE)

230 E. Ohio St., Ste. 400
Chicago, IL 60611
(877) SWE-INFO
www.societyofwomenengineers.swe.org

Soil Science Society of America (SSSA)

677 South Segoe Road
Madison, WI 53711
(608) 273-8080
www.soils.org

Solar Energy Industries Association (SEIA)

575 7th Street, NW
Ste. 400
Washington, DC 20004
(202) 682-0556
www.seia.org

International Code Council (ICC)

500 New Jersey Ave., NW
6th Floor
Washington, DC 20001-2070
(888) 422-7233
www.iccsafe.org

Southern Cypress Manufacturers Association (SCMA)

100 First Ave., Ste. 525
Pittsburgh, PA 15222
(412) 323-9320
www.cypressinfo.org

Southern Forest Products Association (SFPA)

2900 Indiana Ave.
Kenner, LA 70065
(504) 443-4464
www.sfpa.org

Southern Pine Inspection Bureau

(SPIBPO. Box 10915
Pensacola, FL 32524-0915
(850) 434-2611
www.spib.org

Specialty Steel Industry of North America (SSINA)

3050 K Street, NW
Washington, DC 20007
(202) 342-8630
www.ssina.com

Standards Engineering Society (SES)

1950 Lafayette Road
Portsmouth, NH 03801
(603) 926-0750
www.ses-standards.org

Steel Deck Institute (SDI)

P.O. Box 25
Fox River Grove, IL 60021
(847) 458-4647
www.sdi.org

Steel Joist Institute (SJI)

1173B London Links Drive
Forest, VA 24551
(434) 525-7377
www.steeljoist.org

Steel Plate Fabricators Association (SPFA)

944 Donata Ct.
Lake Zurich, IL 60047
(847) 438-8265
www.steeltank.com

Steel Window Institute (SWI)

1300 Sumner Avenue
Cleveland, OH 44115-2851
(216) 241-7333
www.steelwindows.com

Systems Builders Association (SBA)

28 Lowry Drive
West Milton, OH 45383
(937) 698-4127
www.systemsbuilders.org

Tile Contractors Association of America (TCAA)

10434 Indiana Ave.
Kansas City, MO 64137
(800) 655-8453
www.tcaainc.org

Tile Council of America (TCA)

100 Clemson Research Boulevard
Anderson, SC 29625
(864) 646-8453
www.tileusa.com

Underwriters Laboratories (UL)

2600 NW Lake Rd.
Camas, WA 98607-8542
(877) 854-3577
www.ul.com

**Occupational Safety & Health
Administration (OSHA)**

U.S. Department of Labor
200 Constitution Avenue
Washington, DC 20210
(800) 231-6742
www.osha.gov

**Valve Manufacturers Association of
America (VMAA)**

1050 17th Street, NW, Suite 280
Washington, DC 20036
(202) 331-8105
www.vma.org

Vinyl Siding Institute (VSI)

1201 15th Street NW, Ste. 220
Washington, DC 20005
www.vinylsiding.org

Welding Research Council (WRC)

P.O. Box 1942
New York, NY 10156
(216) 658-3847
www.forengineers.org/wrc

**West Coast Lumber Inspection
Bureau (WCLIB)**

P.O. Box 23145
Tigard, OR 97281
(503) 639-0651
www.wclib.org

**Western Red Cedar Lumber
Association (WRCLA)**

1501-700 West Pender Street
Pender Place 1, Business Building
Vancouver, BC V6C 1G8
(604) 684-0266
www.wrcla.org

**Western Wood Products Association
(WWPA)**

522 SW Fifth Avenue, Suite 500
Portland, OR 97204-2122
(503) 224-3930
www2.wwpa.org

**Window and Door Manufacturers
Association (WDMA)**

401 N. Michigan Ave., Ste. 2200
Chicago, IL 60611
(312) 321-6802
www.nwwda.org

**Wire Association International
(WAI)**

1570 Boston Post Road
P.O. Box 578
Guilford, CT 06437
(203) 453-2777
www.wirenet.org

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