



**BUILDING IN ALASKA**

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# Glossary of Home Construction Terms



UNIVERSITY OF ALASKA  
**FAIRBANKS**

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**absolute humidity.** A measure of the actual weight of the water vapor contained in a given volume of air, regardless of the temperature of the air.

**acoustical sealants.** Do not harden, maintain flexibility, and are very durable under severe climatic changes, including freezing temperatures. They are the most effective type of sealant to use for sealing polyethylene (vapor retarder) to itself or other materials.

**adfreeze.** Refers to the freezing of backfill materials to a wall or post, forcing movement of the material due to expansion of water within the soil as it freezes.

**air changes per hour (ACH).** A measurement of air exchanges over a one-hour time period. One air change per hour means that all the air volume in the house is replaced by incoming air in one hour.

**air-dried.** Refers to seasoning of wood. Dried by exposure to air, usually in a lumber yard, without artificial heat.

**air intrusion.** Results when air penetrates insulation.

**air leakage.** The primary mechanism of moisture transport and a significant mechanism for heat loss. Air leakage is unintentional air flow through the building thermal envelope through cracks and holes when a pressure difference exists between inside and outside.

**air pressure.** The pressure exerted by the atmosphere. This may refer to static (atmospheric) pressure, or dynamic components of pressure arising from air flow, or both acting together.

**air retarder.** A material highly impermeable to air, which may be applied to the interior or exterior of the envelope and can be combined with other retarders to achieve more than one purpose.

**air sealing.** The practice of sealing unintentional gaps in the building envelope (from the interior) in order to reduce uncontrolled air leakage.

**air tightness.** The degree to which unintentional openings have been avoided in a building's structure.

**alcove.** An expanded portion of a room. It is not a separate room.

**annual fuel utilization efficiency (AFUE).** The calculated efficiency of a heating system based on average usage over a heating season.

**architrave.** See "head casing."

**argon.** A colorless, odorless, inert gaseous element found in air and volcanic gasses. Argon is used as a gas fill between panes of window glass.

**automatic flue damper.** A damper added to the flue pipe downstream of a furnace or boiler and connected with automatic controls to the burner. Its function is to reduce heat loss up the chimney when the unit is not operating.

**backdrafting.** Describes the pulling of flue gasses back through chimneys and flues into the building. It is to be avoided in all housing, and this is accomplished by using sealed combustion heating appliances and isolating combustion from the living space of a home.

**backer rod.** A foam rope gasket material used for sealing joints that exceed ¼-inch where caulks and other sealing materials are not adequate.

**balloon framing.** A type of framing wherein the first-floor studs continue upward, unbroken, past the second-floor joists, to become the second-floor studs as well. A ledger is used to support the second-floor joists (Fig. 1).

**batter boards.** A combination of stakes and boards to which string is attached to locate the building lines. The boards are installed level and all boards are at the same level. The batter boards and/or lines then serve as a vertical reference as well as for locating building lines. They must be kept far enough back from the actual building corners (normally 3 to 5 feet) so that the excavation does not interfere with them. Either single or double batter boards may be used (Fig. 2).

**beam.** A main structural member that supports other members or loads which are applied perpendicular to the grain lines of the beam. Also called a girder (Figs. 1 and 3).

**birds mouth.** See "crows foot".

**blower door.** A common device for measuring air leakage. The blower door consists of a fan, adjustable door frame, a calibrated hole, and metering equipment.

**boards.** Lumber less than two inches thick and one or more inches wide.

**bottom cut.** See "heel cut".

**bow.** The distortion in a piece of lumber that deviates from flatness along its length but not across its width.

**bracing.** Materials or the installation of materials to form rigid geometric figures—usually a triangle—to reduce or eliminate movement of framing components.

**bridging.** Bracing to stiffen either side wall studs or floor joists (Figs. 1 and 3).

- bridging, cross.** See “cross-bridging”.
- bridging, diagonal.** See “cross-bridging”.
- bridging, solid.** See “solid bridging”.
- British thermal units (BTUs).** Are a measurement of heat. One BTU is equal to the amount of heat required to raise the temperature of one pound of water one degree Fahrenheit.
- broken gable roof.** See “salt box roof”.
- building orientation.** The siting of a building on a lot, generally used to refer to solar orientation which is the siting of a building with respect to solar access.
- building science.** The study of how building thermal envelopes function under various sets of conditions.
- building thermal envelope.** Consists of the parts of the building that separate heated space from unheated space. The building thermal envelope generally includes the foundation, floors, walls, attic, and windows and doors.
- butts.** The type of hinge usually used to hang the doors in homes. A hinge with “identical” pieces on each side of the pin. The length along the pin is usually about double the length measured from the pin to one side.
- bypass.** An intentional opening cut for electrical, mechanical, or plumbing items that allows air to leak from one area to another.
- CGSB.** The Canadian General Standards Board is a government agency within the Canadian Federal Department of Supply and Services. CGSB has been accredited by the Standards Council of Canada as a national standards writing organization engaged in the production of voluntary standards in a wide range of subject areas through the media of standards committees and the consensus process.
- cap.** See “plate”.
- capillary action.** The ability of liquid to rise upward due to the attraction of liquid molecules to a surface. Wicking is an example of capillary action. It is the least obvious mechanism of moisture flow.
- capillary breaks.** Are created by using materials with larger pores or an impermeable surface to create a break between porous materials and moisture sources.
- casing.** Pieces of trim board used to finish off the edge of a jamb. Used to close the opening between the edge of the jamb and the face of the wall.
- casing, head.** See “head casing”.
- casing, side.** See “side casing”.
- Celsius.** A temperature scale at which water freezes at 0° and boils at 100°.
- cement.** The basic ingredient of concrete. A chemical combination of calcium, silica, aluminum, iron, and small amount of other materials. During grinding, gypsum is added to control the setting time of the concrete. See “concrete”.
- check.** A lengthwise separation of wood that usually extends across the rings of annual growth and commonly results from stresses set up in wood during seasoning.
- cheek cut.** A bevel cut. Necessary, for example, where a jack rafter joins the hip rafter. Also called a side cut.
- cladding.** Covering applied to outside of a structure to protect the inner core.
- cleat.** A block, usually shorter than a ledger but serving the same purpose, used to support another member. For example, in one stair-framing method, cleats are nailed to the stringers to support the treads.
- clerestory.** An outside wall of a room or building that rises above an adjoining roof and contains windows.
- coefficient of performance (COP).** The measure of a heat pump’s rate or net heat output. COP is the ratio of the net heat out for heating to the total on-site energy input to the heat pump.
- collar beam.** See “collar tie”.
- collar tie.** A horizontal member used to tie a pair of opposing rafters together. May be high to hold the upper joint together or may be low to serve as a ceiling joist. Also called a collar beam (Fig. 6).
- combustion air.** The air required to provide adequate oxygen for fuel burning appliances in the building. The term is often used to refer to the total air requirements of a fuel burning appliance, including both air to support the combustion process and air to provide chimney draft (dilution air).
- common rafter.** A roof member extending from the plate to the ridge, except valley or hip rafter (Fig 6).
- concrete.** A combination of cement, water, and other inert materials such as sand and gravel which hardens as it dries because of the chemical action between the water and the cement. The water and cement bind the other aggregates together. See “cement”.
- condensation.** The beads, drops of water, or, in extremely cold weather, the frost that accumulates on building elements or surfaces (most often windows) when warm, moisture-laden air from the interior reaches the point at which the temperature no longer permits the air to sustain the moisture it holds.

- conduction.** The main mechanism of heat flow from energy tight houses. By direct contact, heat is transferred from molecule to molecule from the warm side of a solid material to the cold side.
- controlled ventilation.** Ventilation brought about by mechanical means through pressure differentials induced by the operation of a fan.
- convection.** The transfer of heat by the circulation or movement of the heated parts of a liquid or gas.
- corner post.** Forms the corner of the wall. Usually made from three studs (Fig. 7).
- cornice.** A group of moldings used to enclose the ends and bottom of the rafter tails. It forms the finish for the eaves. Also, sometimes applied to the finish on the ends of the roof. See "rake".
- cricket.** The small "gable dormer" built behind a chimney to direct water around or to the sides of the chimney. Also called a saddle.
- cripple jack rafter.** A rafter that is cut to fit between a hip rafter and a valley rafter and touches neither the plate nor the ridge ( Fig. 6).
- cripple jack stud.** A stud that touches neither the shoe nor the plate. For example, the stud used to form a window opening (Fig. 5).
- crook.** The distortion in a piece of lumber that deviates from a straight line along its edge, from end to end.
- cross-bridging.** Bridging that consists of either metal straps or narrow pieces of wood. Two members are used, for example, between each pair of joists so as to form an "X". Also called diagonal bridging (Fig. 4).
- crow's foot.** One type of rafter bottom cut, consisting of a level cut and a plumb cut making a notch to set over the plate. Also called a birds mouth.
- cup.** The distortion in a piece of lumber that deviates from flatness across its width but not along its length.
- dampproofing.** The process of coating a floor or the interior or exterior of a foundation wall with bituminous emulsions and plastic cements. The purpose of dampproofing is to prevent or interrupt the capillary draw of moisture into the wall or floor system and to the interior of the foundation. Polyethylene can also be used for exterior dampproofing.
- dehumidistat.** An electronic sensing and control device used to regulate mechanical ventilation according to relative humidity in the building. When the relative humidity surpasses the preset limit, the dehumidistat activates the ventilation system to exhaust house air and bring in drier outdoor air.
- delamination.** Separation of plies through failure of the adhesive holding the plies together, as in plywood. The term is often used in reference to the durability of the glue line.
- Delta T.** The difference between inside temperature and outside temperature. Delta T is used in heat loss calculations and comes from engineering jargon, where the Green letter delta,  $\Delta$ , is used to mean "difference".
- design heating load.** The design heating load of a house is calculated from the 97.5 percentile low temperature. Only 2½ percent of the days at any site are colder than this, so it is used as the economic choice for heating system capacity.
- dew point.** The temperature at which air can no longer hold additional moisture. The dew point is the temperature at which condensation will occur and relative humidity reaches 100 percent.
- diagonals.** The interior or web members of a truss which form triangles — rigid geometric figures — between or in conjunction with the top and bottom chords. See "truss."
- dilution air.** The air required by some combustion heating systems in order to isolate the furnace from outside pressure fluctuations and to maintain an effectively constant chimney draft.
- dimension lumber.** Lumber from two inches to, but not including, five inches thick and two or more inches wide.
- direct gain.** A term referring to a type of solar heating in which the solar collection area is an integral part of the building's usable space; for example, windows. Direct gain is the solar energy received through these windows.
- direct vent.** Equipment which uses combustion air supplied from outside the building envelope rather than air that is inside the building envelope. Exhaust gasses are vented directly outside. The system is closed (See "sealed combustion").
- dormer.** An addition to a roof and attic to provide extra space and to allow windows in the attic space.
- dormer, gambrel.** See "gambrel dormer".
- dormer, gable.** See "gable dormer".
- dormer shed.** See "shed dormer".
- dressed lumber or size.** The finished size of a piece of lumber after drying and surfacing by a planing machine. For example, a 2- by 4-inch stud actually measures 1½ by 3½ inches after drying and being planed. See "normal size".

- eaves.** The lower end or bottom of the rafters. With no rafter tail, the junction of the wall and rafters form the eaves.
- edge effect.** Thermal conduction which occurs around the edges of window frames. Condensation, often seen around the edge of windows, is a result of edge effect.
- emissivity.** A measure of the amount of radiation intensity emitted from a surface compared to the radiation intensity at the same wavelength emitted from a black body at the same temperature. Reflective coatings, known as low emissivity or low-E coatings, reduce radiant heat loss from windows because they are good reflectors of thermal radiation (heat).
- energy.** The capacity to do work and overcome resistance or potential forces, and such forces or power in action.
- energy factor (EF).** An overall efficiency rating which includes standby losses used for rating water heaters. EF is based on the use of 64 gallons of hot water per day.
- energy target.** An approach for establishing energy efficiency goals. Energy targets are established in terms of BTUs per year per square foot of floor space for a given climate and are calculated by ACHP homes by utilizing the HOT2000 computer simulation.
- EPDM.** Ethylene propylene diene monomer, a synthetic rubber gasket material.
- equivalent leakage area (ELA).** The total area of all cracks and holes in the building envelope added together to measure the size of an equivalent single hole in the building envelope.
- exfiltration.** Air leakage that flows out of the house.
- exhaust air.** Air removed from a location such as the bathroom, kitchen, or laundry room. Exhaust air is not reused but mechanically expelled to the outdoors.
- external static pressure.** The pressure developed external to the unit (filters, core, housing, and fans) to deliver a specific air flow, expressed as Pascals or inches of water column.
- Fahrenheit.** A temperature scale at which water freezes at 32° and boils at 212°.
- fascia.** The part of the cornice that encloses or covers the ends of the rafter tails; or, the part of the rake trim that covers the outer side of the fly rafter.
- fire stop.** A horizontal wood member cut to fit between the studs. Usually placed at each floor level to help keep fire from spreading from floor to floor. Primarily necessary with balloon framing. Helps to prevent the space between studs from functioning as a chimney. May also be used between joists (Fig. 1).
- flashings.** The process or materials used in making a joint watertight by fitting tin, lead, zinc, or other material in such a way as to prevent the water from penetrating the joint.
- flight of stairs.** The series of steps leading from one landing to another.
- flow-through principle.** Describes the construction of building assemblies so that each material used has a higher permeability as vapor travels through a cross section of the building envelope from inside to outside. Using the flow-through principle for construction of building assemblies prevents vapor from being trapped at any point inside the assembly.
- flue and vent effect.** A pressure difference across the building envelope caused by mechanical equipment exhausting air from inside the building envelope.
- fly rafter.** A rafter located beyond the end wall of the house. It forms the extreme outer edge of the structural part of the roof.
- footing.** The lower and expanded portion of a foundation which rests on the excavated surface. The purpose of the footing is to provide a larger bearing surface over which the weight of the building is spread so that the bearing pressure created by the weight of the building does not exceed the allowable bearing pressure of the soil.
- forced draft.** Appliances place a fan in front of the flame, forcing air into the combustion chamber, resulting in forced draft.
- framing.** The lumber used as structural members in a building, such as studs and joists. Also refers to the process of erecting the structural members of a building.
- frieze board.** The board that forms the junction between the finish siding and the plancher.
- foundation.** Walls, piers, or other supports placed below grade or curb levels to support the building. Usually made of materials that are not susceptible to damage from soil, moisture, or soil organisms. Concrete and preservative-treated wood are examples.
- foundation coating.** A material, usually of a bituminous composition, applied to the outside surface of a foundation to retard or prevent moisture migration through the foundation.
- freezing degree days.** (or Air Freezing Index) A measure of the total number of degrees that outside temperature is below freezing during the year. Freezing degree days (measured below 32°F) provide a basis for calculating the depth of annual ground freezing or ice thickness.

- frost heaving.** The movement of soils caused by the phenomenon known as ice lensing or ice segregation. Water is drawn from the unfrozen soil to the freezing zone where it forms layers of ice, forcing soil particles apart and causing the soil surface to heave.
- furring.** Additional framing placed inside or outside that protects the air-vapor retarder and allows more space for insulation.
- furring strip.** Any piece of material (though usually a 1 by 2 or 1 by 3) used to form an air space, as between a basement wall and paneling; or to form a mounting materials for a new siding or ceiling, such as used when applying ceiling tiles over a plaster ceiling.
- gable.** Refers to the end wall area of a building, located between the end wall plate (bottom of rafters or trusses) and the roof.
- gable dormer.** A dormer with a gable-type roof and its own ridge board perpendicular to the ridge board of the main roof.
- gable roof.** A roof with two equal slopes meeting at the ridge. The end of the roof is vertical and appears to be an inverted cone (Fig. 8b).
- gambrel dormer.** A dormer with a gambrel-type roof and its own ridge board perpendicular to the ridge board of the main roof.
- gambrel roof.** A modified gable roof in which each side of the roof has two distinctly different slopes — a steeper slope at the bottom and a smaller or lower slope near the ridge. The slopes on each side of the roof are equal. A “true” gambrel roof has a slope inclined 60° above the horizontal at the bottom and a slope inclined 30° above the horizontal at the top. This roof style is typical of “Dutch Colonial” homes (Fig. 8c).
- girder.** A main horizontal member, on edge, intended to support secondary structural members, such as joists (Figs. 1 and 3).
- girt.** See “plate”.
- gusset.** The parts of a truss that hold the joints together. May be plywood, metal, sawn boards, or any other material of adequate strength.
- head casing.** The horizontal casing used along the top of an opening such as a door or window opening. Also called the architrave.
- header.** A horizontal member, on edge, that closes off space between joists. Also used to form an opening through joists, such as when making an opening through which stairs will pass (Figs. 3 and 9).
- head jamb.** A horizontal member used to form the finished top of an opening, such as for a door.
- heat.** A form of energy resulting from the average kinetic energy (velocity) of molecules.
- heat mirror.** A trademark for a low emissivity coating applied to glass directly or to a plastic film that is adhered to glass or suspended between the glazing in windows.
- heat recovery ventilators (HRV).** Includes air-to-air heat exchangers and air-to-water heat exchangers. HRVs extract heat from ventilation air that would otherwise be wasted.
- heat capacity of air (HC).** A physical characteristic of air used in air leakage and heat loss calculations. HC is the amount of heat required to raise the temperature of one cubic foot of air one degree Fahrenheit. This amount of heat depends on the density of the air and varies from area to area. It will generally be within the range of 0.018 to 0.022 BTU/per cubic foot degree Fahrenheit.
- heating degree days.** A measure of the difference between average daily outdoor temperature and an index temperature, usually 65° F. Heating degree days measured below 65°F provide information for calculating the annual fuel requirement for a heated building.
- heating season performance factor (HSPF).** A factor used to rate heat pump or central air conditioner performance. HSPF is the total heating output in BTUs of a heat pump during its normal annual use divided by the total electric power input during the same period.
- heel cut.** A cut on a rafter where it meets the plate; it is horizontal when the rafter is properly located.
- hip.** An outside corner in the roof (Fig. 6).
- hip rafter.** The main rafter of the hip which forms the roof break line (Fig. 6).
- hip roof.** A roof in which both sides and both ends lean towards the center of the building, with the same slope.
- HOT2000.** A computer heat loss calculation program used for estimating the space heating requirements of residences. It was primarily developed by the National Research Council of Canada. It includes calculations for home design optimization, below-grade heat loss, and solar gains through windows. It is also a required element in design and certification of an Alaska Craftsman Home.
- hot roof.** Unvented roof.
- house depressurization.** The condition that exists when pressure within the envelope is lower than the pressure outside.

- ice damming.** An ice buildup that occurs from heat loss through a roof where there is insufficient insulation and ventilation. In addition, air leakage from exterior walls coupled with inadequate soffit ventilation contributes to ice damming. Typically ice damming is associated with dysfunctional hot roofs.
- impermeable.** Not permitting water vapor or other fluid to pass through.
- induced draft.** An appliance in which a fan is placed after the flame, pulling air into the combustion chamber, resulting in induced draft.
- infiltration.** Air leakage that flows into the house.
- insulation (thermal).** Materials that retard the transfer of heat.
- intrinsic heat.** Heat from human bodies, electric light bulbs, cooking stoves, and other objects not intended specifically for space heating.
- jack rafter.** Any rafter that is shorter than a common rafter and touches either ridge board or plate but not both. Hip jack rafters and valley jack rafters are examples (Fig. 6).
- jack rafter, cripple.** See “cripple jack rafter”.
- jack stud.** A stud that touches either the plate or the shoe but not both, such as the studs above or below a window (Fig. 4).
- jack stud, cripple.** See “cripple jack stud”.
- jamb.** A member used to form the finished sides of an opening, such as door jambs.
- jamb, head.** See “head jamb”.
- jamb, side.** See “side jamb”.
- joist.** A horizontal member, usually placed on edge to support floor or ceiling; one of a series of parallel beams (Figs. 1 and 3).
- joist hanger.** A metal “U-shaped” bracket for supporting the ends of joists. The use of joist hangers permits joists to be supported along the side of the support beam or girder, thereby increasing headroom.
- KD.** Abbreviation for kiln-dried.
- kiln.** A heated chamber used for drying lumber, veneer, and other wood products.
- kiln-dried.** Dried in a kiln with the use of artificial heat.
- laminated.** A product made by bonding together two or more layers (laminations) of material or materials. Plywood is an example.
- landing.** A horizontal resting place in a flight of stairs. Used in long flights or at turns.
- latent heat.** Heat added or removed during a change of state (for example, from water vapor to liquid water), while the temperature remains constant.
- lath.** Thin strips of wood or metal that are nailed to studs to form supports for a plaster wall. The plaster is applied over the lath.
- lean-to.** See “shed roof”.
- ledger.** See “ribband”.
- let-in.** To notch one member so as to form a socket to receive a second member. A ribband is sometimes “let-in” to the studs which support it. Likewise, corner bracing may be “let-in” to the studs it is bracing.
- level cut.** Any cut which, when the member is properly located, is horizontal or level.
- lintel.** A horizontal member over an opening, such as a door or window, which carries the weight of the studs, joists, or rafters above it (Fig. 5).
- log.** A section of the trunk of a tree of suitable length for sawing into commercial lumber.
- lookout rafter.** Roof-framing members that tie together the fly rafter and the first common rafter in from the end wall. They lie on the end wall and support the fly rafter.
- low-E.** Or low emissivity, from emissivity, which represents a measure of the tendency of a surface to emit or absorb radiant heat. Typical references to “low-E” occur in modern window systems.
- lumber.** Any product of the saw and planing mill produced by sawing, resawing, passing lengthwise through a standard planing machine, and crosscutting to length with no further manufacturing.
- lumens.** A measure of visible light output. A standard 60-watt incandescent bulb produces 870 lumens.
- make-up air.** Outdoor air supplied to replace exhaust air. Make-up air may enter the house by infiltration, through a make-up air duct, through a supply fan, etc. It does not include air entering the house as combustion air or to replace exfiltration air.
- mechanical systems.** Provide and maintain the internal environment of the house. They include heating, domestic hot water, ventilation, plumbing, and electrical systems.
- mechanical ventilation.** One or more fans used to move air to achieve desired air exchange and ventilation.
- mechanisms of air flow.** The processes by which air leakage occurs. Air flows in or out of a home unintentionally through three mechanisms: wind effect, stack effect, and flue and vent effect.

**mechanisms of energy flow.** The processes by which energy flows from the house. Energy leaves a home through three major mechanisms: conduction, convection, and radiation.

**mechanisms of moisture flow.** The processes by which moisture flows into or out of a home. There are four primary mechanisms of moisture flow: air leakage, vapor diffusion, capillary action, and gravity.

**millwork.** Generally, all building materials made of finished wood and manufactured into such items as doors, windows, moldings, etc. It does not include flooring, ceiling, or siding materials. See "planing-mill products".

**mitre.** The angular joint formed by two pieces of material each sawed at an angle to match when joined. Casings (head and side) are usually mitred where they meet.

**muntins.** The part of a window sash that supports the edges of adjoining pieces of glass.

**NFS.** An abbreviation of non-frost-susceptible materials, which are not subject to frost heave or other frost action when freezing.

**natural draft.** Combustion appliances that use the buoyancy of hot air for venting gasses are referred to as natural draft appliances.

**natural ventilation.** Air leakage through holes and cracks or by opening windows and doors for a supply of outdoor air. It is unreliable and random, since it is uncontrolled and varies widely by season.

**negative pressure.** A lower pressure than the surrounding area. The surrounding area is usually the outside.

**neutral pressure plane.** An area that separates the regions of the house where air pressure is either positive or negative in relation to the outside at any given time. At a neutral plane, the pressure is equal both inside and out, and no leakage would occur through holes at this point.

**nominal size.** As applied to timber or lumber, the rough-sawed commercial size by which it is known and sold in the market. See "dressed lumber or size".

**normalized leakage area (NLA).** The NLA is calculated by dividing the equivalent leakage area (ELA) from the fan test by the area of the exterior envelope of the house.

**nosing.** The outer or front edge of the step that projects beyond the riser.

**orientation.** The direction with respect to point of the compass in which the building axis lies or external walls face.

**outgassing.** The emission of gasses from various building products after the manufacturing process is complete.

**Pascal.** A metric measurement of pressure difference. One Pascal is equivalent to the amount of pressure that .004 column inches of water exerts at 55° F. House air leakage tests are typically conducted by maintaining a constant pressure difference of 50 Pascals.

**passive ventilation.** Takes advantage of the stack effect or wind pressure differences to provide air movement. It is unreliable and random.

**permafrost.** Perennially frozen subsoil in arctic or subarctic regions. Technically, permafrost is any material of the earth's crust which remains below 32°F (0°C) for two consecutive years or more.

**permeance.** Water vapor permeance is the rate of water vapor diffusion through a sheet of any thickness of material (or assembly between parallel surfaces). It is the ratio of water vapor flow to the differences of the vapor pressures on the opposite surfaces. Permeance is measured in perms (grams / ft<sup>2</sup> / hr / in. mercury).

**piazza.** See "porch".

**pitch.** The slant of a roof; the total roof rise divided by the total roof span. For example, for a 24-foot span and a 6-foot rise, pitch would equal 6/24 or 1/4. See "slope".

**plancher.** The part of a cornice that covers or encloses the bottom portion of the rafter tail. Sometimes called the soffit.

**planing-mill products.** Products worked to pattern, such as flooring, ceiling, and siding materials.

**plank.** A broad board, usually more than one inch thick, laid with its wide dimension horizontal.

**plate.** A horizontal member that rests on the upper end of the studs and upon which upper floor joists or roof rafters rest. May be a single or double member. Also called a girt or cap (Figs. 1, 3, and 5).

**platform framing.** A type of framing wherein the first- and second-floor studs are separate pieces of wood. The first-floor studs have a plate on top of them upon which the second-floor joists rest. The second-floor studs continue upward from a shoe placed on the second-floor joists (Fig. 3).

**plenum.** The space in which a gas, usually air, is contained at a pressure greater than atmospheric pressure. It is usually found as an element of a forced-air heating system.

**plumb cut.** A cut that is vertical when the member is properly located. For example, the cut on a rafter

where it meets the ridge board. Also called a top cut when referring to rafters.

**plywood.** A cross-banded assembly made of layers of veneer or of veneer in combination with a lumber core or plies joined with an adhesive. The grain of adjoining plies is usually at right angles, and almost always an odd number of plies is used to obtain balanced construction.

**porch.** A covered platform at the door of a house, usually having steps with baluster guards and sometimes seats at the sides. (Note distinction between porch and stoop.) Also commonly called a piazza or verandah.

**positive pressure.** Greater than atmospheric pressure. In residential construction this refers to pressure inside the house envelope that is greater than the outside pressure; a positive pressure difference will encourage exfiltration.

**preservative.** Any substance that, for a reasonable length of time, is effective in preventing the development and action of wood-rotting fungi, borers of various kinds, and harmful insects that deteriorate wood.

**pressure difference.** The difference in pressure of the volume of air enclosed by the house envelope and the air surrounding the envelope.

**psychrometric charts.** Psychrometric charts are used to determine dew point (the temperature at which condensation will occur) and the relative humidity of air at various temperatures.

**R-value.** (Resistance value) is a measurement of the ability of a material to resist heat transfer. The higher the resistance to heat transfer (R-value), the less heat transfer through the material.

**radiant heat.** (transfer) The transfer of heat from a location of higher temperature to a location of lower temperature by means of electromagnetic radiation.

**radiation.** A mechanism of heat flow. Radiant energy is exemplified by sunlight, which flows omnidirectionally from the source of radiation, the sun. A wood stove is a good example of a radiant heater.

**radon.** A radioactive gaseous chemical element formed, together with alpha rays, as the first product in the atomic disintegration of radium.

**rafter.** Usually an inclined member which supports the roof. Can also be flat or horizontal (Figs. 1, 3, and 6).

**rafter, common.** See "common rafter".

**rafter, cripple jack.** See "cripple jack rafter".

**rafter, fly.** See "fly rafter".

**rafter, hip.** See "hip rafter".

**rafter, jack.** See "jack rafter".

**rafter, lookout.** See "lookout rafter".

**rafter, valley.** See "valley rafter".

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

**rake.** The portion of the roof projecting beyond or overhanging the end wall. Sometimes called a cornice.

**reflective coatings.** Layers of metal atoms applied to glass to change the emissivity and limit radiant heat transfer.

**relative humidity.** A measure of the amount of water vapor that is held by air at a given temperature, relative to the maximum amount of water vapor it can hold at that temperature. Relative humidity is expressed as a percentage.

**reveal.** The portion of the edge of a jamb or stile that is exposed by keeping the casing back a small amount — usually  $\frac{3}{16}$  to  $\frac{1}{4}$  inch.

**ribband.** A horizontal member attached to other members either vertical or horizontal, by spiking or letting-in to form a ledge or "shelf" for a third member to rest upon. Also called a ledger or spiking strip.

**ridge board.** A member made of 1- or 2-inch board, against which the upper part of the rafters rest. The rafters of one side of the roof meet the rafters from the other side of the roof at the ridge board (Fig. 6).

**rise.** The difference in height between one end of a rafter and the other; or the vertical distance between the treads of a set of stairs; or the difference in height of the top and bottom of a set of stairs.

**riser.** The board forming the vertical portion of the front of a step.

**rough lumber.** Lumber as it comes from the saw.

**run.** The horizontal distance over which a rafter stretches. For example, as measured from a plumb line dropped at the ridge to the outside of the plate.

**saddle.** See "cricket".

**salt box roof.** A modified gable roof with a different slope and rafter run on each side of the ridge. The portion of the roof behind the ridge is usually longer and has a smaller slope than the portion of the roof in front of the ridge. Also called a broken-gable roof (Fig. 8e).

**sandwich, structural.** See "structural sandwich construction".

- sash.** The portion of a window into which the glass is set or mounted. Roughly, the movable part of a window.
- scaffold.** A platform built against the side of a building for the support of workmen. A one-story structure suitable for work on low buildings. See “staging”.
- sealants.** Flexible materials used on the inside of a building to seal gaps in the building envelope thereby preventing uncontrolled air infiltration and exfiltration.
- sealed combustion.** A type of appliance which uses an air supply that is connected to the outside. A sealed pipe brings combustion air to the flame and a sealed flue takes the gasses away. The flame and its gasses are located outside the envelope, contained within the appliance’s separate system.
- seasoning.** Removing moisture from green wood in order to improve its serviceability.
- seat cut.** See “heel cut”.
- shading coefficient (SC).** A measure of a window’s ability to transmit solar energy. SC is expressed as a number between 0 and 1. The lower a window’s shading coefficient, the less solar heat it will transmit and the greater its shading ability.
- shake.** A separation along the grain, the greater part of which occurs between the rings of annual growth.
- sheathing.** A floor, wall, or roof covering which forms a solid surface for attachment of the finishing flooring, siding, or roofing.
- shed dormer.** A dormer with a one-slope roof. Usually used when a dormer is desired over the full length of the main roof.
- shed roof.** A roof with only one slope. Also called a lean-to (Fig. 8a).
- shoe.** A horizontal member upon which the lower end of studs rest. May also be called a sole (Figs. 3 and 5).
- side casing.** A vertical casing used along the sides of an opening such as a door or window opening.
- side cut.** See “cheek cut”.
- side jamb.** A vertical member used to form the finished sides of an opening, as for a door.
- sill.** A horizontal framing member placed across the bottom of door or window openings (not always used on interior openings). Also, a horizontal member which lies on top of a stone or masonry wall, usually bolted down to tie the wood construction to the masonry or stone construction (Figs. 1 and 3).
- skylight.** A window placed in the roof of a building, or ceiling of a room, for the admission of light and usually also for ventilation.
- slope.** The angle of a roof; the total roof rise divided by the total roof run. For example, with a 24-foot span and a 6-foot rise, each side of a gable roof would have a run of 12 feet and slope would equal  $6/12$  or  $1/2$ . See “pitch”.
- soffit.** The portion of the rake trim that encloses the bottom of the lookout rafters.
- solar heat gain.** In passive solar heating a term referring to the amount of heat gained through windows over the heating season. Net solar gain refers to the solar heat gain less the heat losses through the windows.
- sole.** See “shoe”.
- solid bridging.** Bridging consisting of pieces of wood of the same size as the member being braced (joist or stud) and cut to fit between each two members (Fig. 4).
- span.** The horizontal distance from the outside of one plate to the outside of the other.
- spiking strip.** See “ribband”.
- stack effect.** A pressure difference across the building envelope caused by inside and outside temperature differences.
- staging.** An elevated platform built against the side of a building to support workmen. More substantially built than scaffolding and suitable for greater heights. See “scaffold”.
- stand-by loss.** Heat loss from domestic water heaters while the heater is standing by waiting for hot water to be used. Also similar for hot water hydronic heating systems.
- strapping.** In framing, additional horizontal wood members used to add strength to the wall.
- stile.** The vertical, or side, pieces of a window frame which form the finished sides — similar to the side jambs of a door opening.
- stoop.** An uncovered platform at the door of a house, usually having steps with baluster guards and sometimes seats at the sides. (Note distinction between stoop and porch.) Essentially a “primitive porch” without a roof.
- stringer.** The inclined member used to form the main supports for a set of stairs (Fig. 10).
- structural lumber.** Lumber that is two or more inches thick and four or more inches wide. It is intended for use where working stresses are required.
- structural sandwich construction.** A layered construction comprising a combination of relatively high-strength facing materials intimately bonded to, and acting integrally with, a low-density core material.

**stud.** A vertical framing member that is used to form partitions or outside walls and carries the floor or roof above it (Figs. 1, 3, and 5).

**stud, cripple jack.** See “cripple jack stud”.

**stud, jack.** See “jack stud”.

**supply air.** Is recirculated and ventilation air supplied into a space after conditioning by heating, filtering, cooling, or mixing with outside air.

**surfaced lumber.** Lumber that is dressed by running it through a planer.

**tail.** That portion of a rafter or truss that extends beyond the outside edge of the place (Fig. 6).

**tail beam.** A joist which has been cut off in order to provide an opening for a set of stairs, chimney, etc. (Fig. 9).

**thermal break.** A material of low conductivity used in an assembly to prevent flow of heat by conduction from one side of the assembly to the other; materials used for this purpose in the frame of metal windows.

**thermal bridge.** A low thermal-resistance path connecting two surfaces; for example, framing members in insulated frame walls or metal ties in cavity wall and panel construction. The opposite concept of a thermal break.

**timbers.** Lumber five or more inches in its least dimension.

**threshold.** The finished bottom of a door opening. The purpose is to raise the bottom of the opening, which in turn permits the door to be shorter so that it has clearance at the bottom when opened but still closes tightly.

**top cut.** See “plumb cut”.

**tread.** The horizontal or step part of a set of stairs.

**truss.** A structural member used in place of common rafters on longer spans. Consists of an upper chord in place of the rafter and a lower chord which replaces the top-floor ceiling joists. Diagonals or web members are placed between the chords. See “diagonals”.

**truss uplift.** An upward truss movement due to the bottom and top chords being exposed to different temperatures and relative humidities.

**twist.** A distortion caused by the turning or winding of the edges of a piece of lumber so that the four corners of any face are no longer in the same plane.

**U factor.** A measurement of the ability of a material to conduct heat. The lower the conductance (U Factor) the less heat loss through the material. The units for total conductance (U) are BTUs per hour per square foot of material per degree Fahrenheit temperature difference across the material.

**valley.** An inside corner in the roof (Fig. 6).

**valley rafter.** The main rafter of the valley which forms the roof break line (Fig. 6).

**vapor barrier.** A membrane resistant to moisture penetration, used to prevent warm, moist air from traveling through the wall, ceiling, etc.

**vapor diffusion.** The movement of water vapor between two areas caused by a difference in vapor pressure, independent of air movement. The rate of diffusion is determined by 1) the difference in vapor pressure, 2) the distance the vapor must travel, and 3) the permeability of the material to water vapor. Hence, the selection of materials of low permeability for use as vapor retarders in buildings.

**vapor pressure.** The pressure exerted by a vapor either by itself or in a mixture of gases. For example, when referring to water vapor, the vapor pressure is determined by the concentration of water vapor in the air.

**vapor retarder.** A material with a low perm rating. Vapor retarding materials are used to reduce water vapor transport.

**veneer.** A thin layer or sheet of wood.

**ventilation.** Intentional air flow with a specific purpose, typically to provide ample healthy fresh air.

**verandah.** See “porch”.

**voids.** Areas without insulation, resulting from improper or careless installation of the insulation.

**warp.** Any variation from a true or plane surface. Warp includes bow, crook, cup, and twist, or any combination thereof.

**weather barrier.** In building, the weather barrier is the exterior wind and water shedding material.

**web members.** See “diagonals” and “truss”.

**western framing.** See “platform framing”.

**wind effect.** A pressure difference across the building envelope caused by wind.

**winders.** Steps which are not parallel to each other — as in stairs that go around a turn without a landing (Fig. 10).

**yard lumber.** Lumber of all sizes and patterns that is intended for general building purposes.

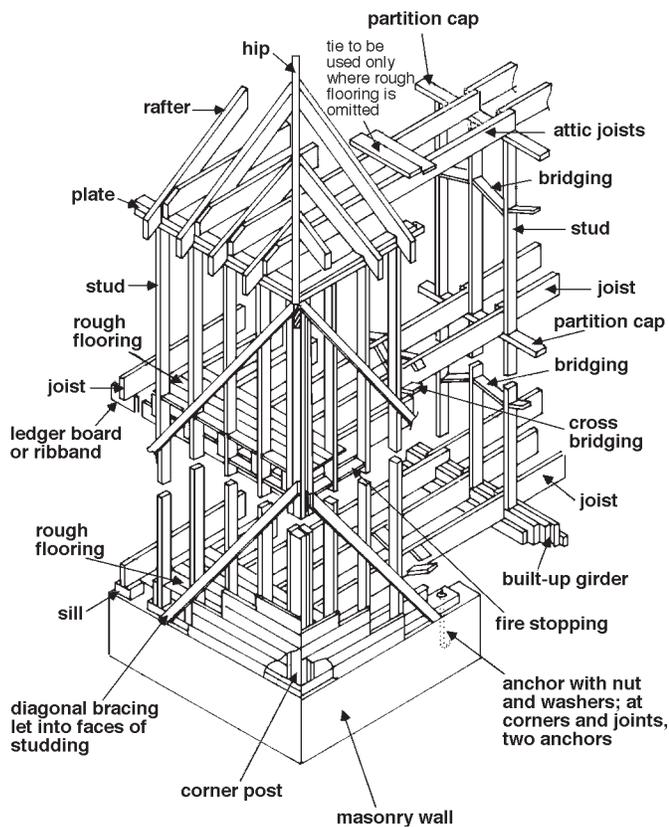


Figure 1. Balloon Framing

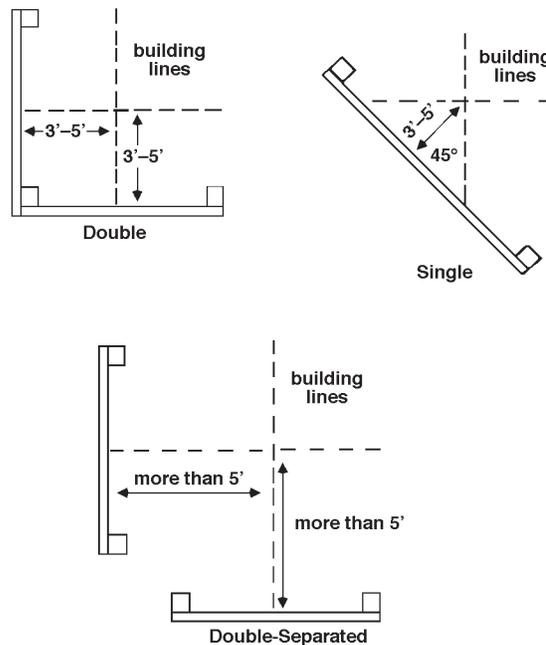


Figure 2. Batten Boards – Alternate Layouts

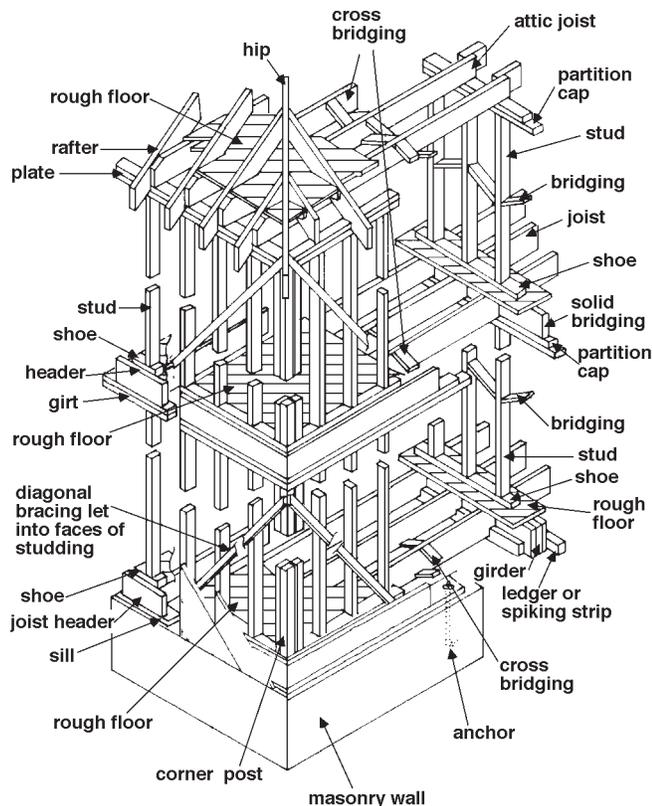


Figure 3. Platform or Western Framing

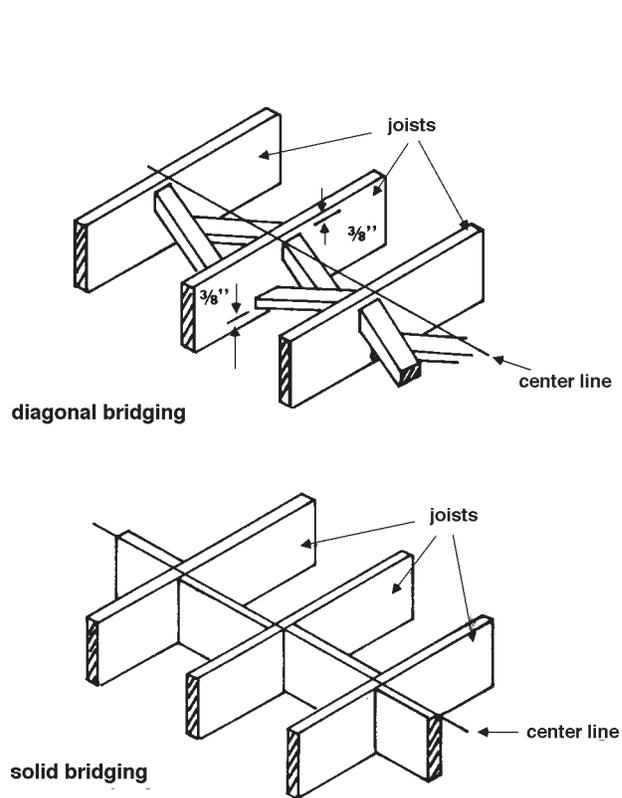


Figure 4. Methods of Installing Bridging

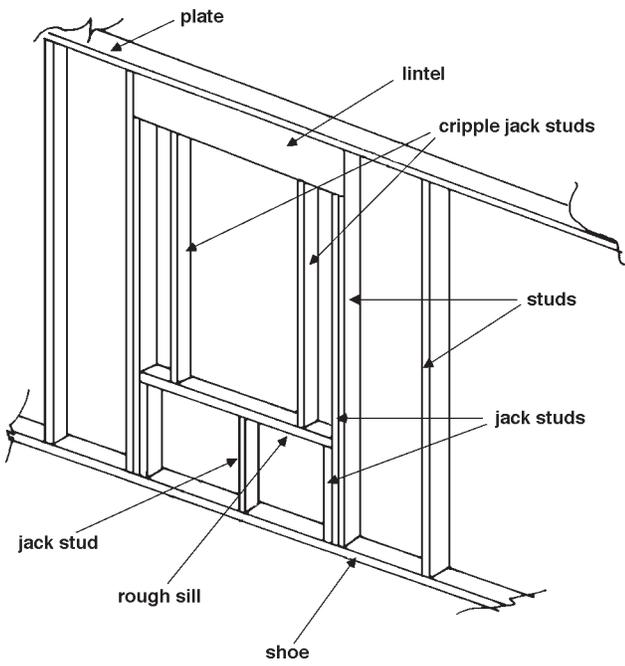


Figure 5. Window Framing

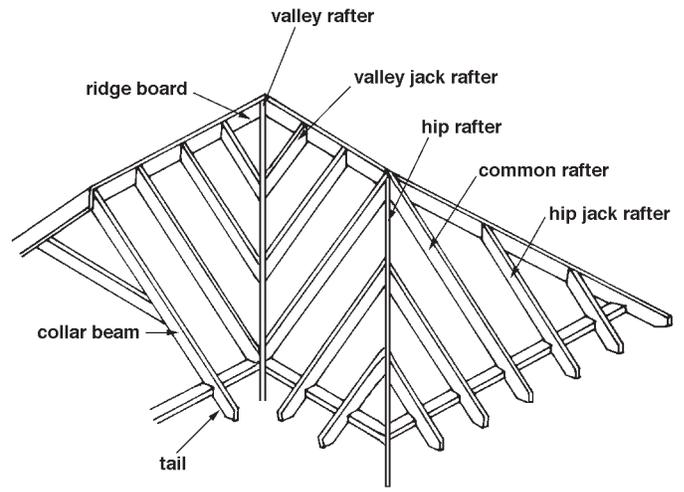


Figure 6. Hip and Valley Framing

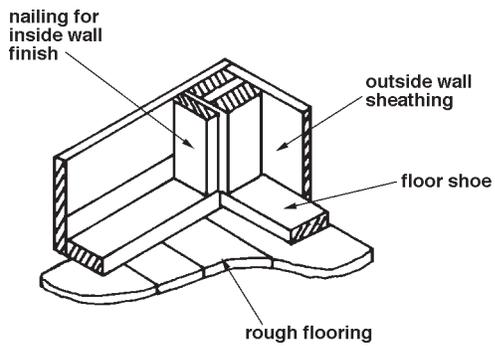


Figure 7. Three-Piece Corner Post

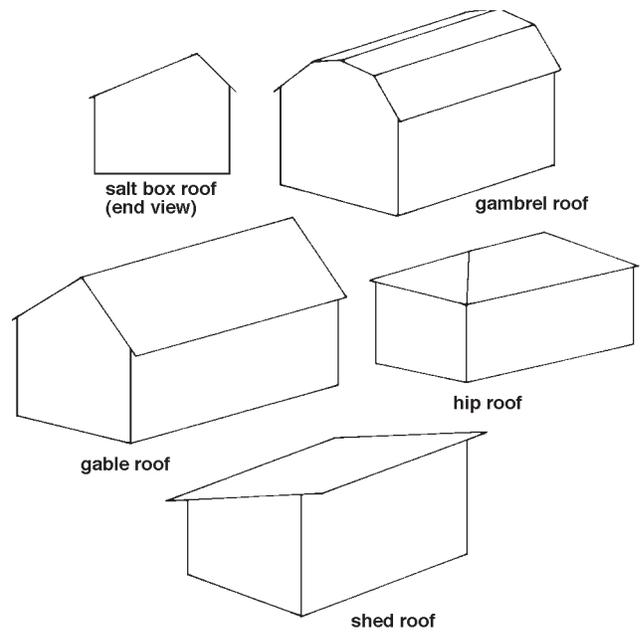
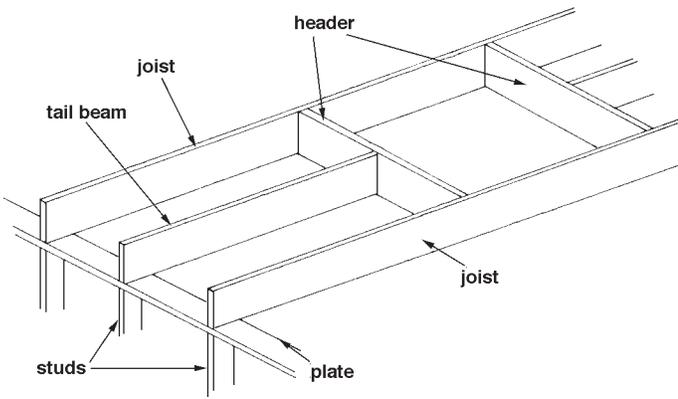
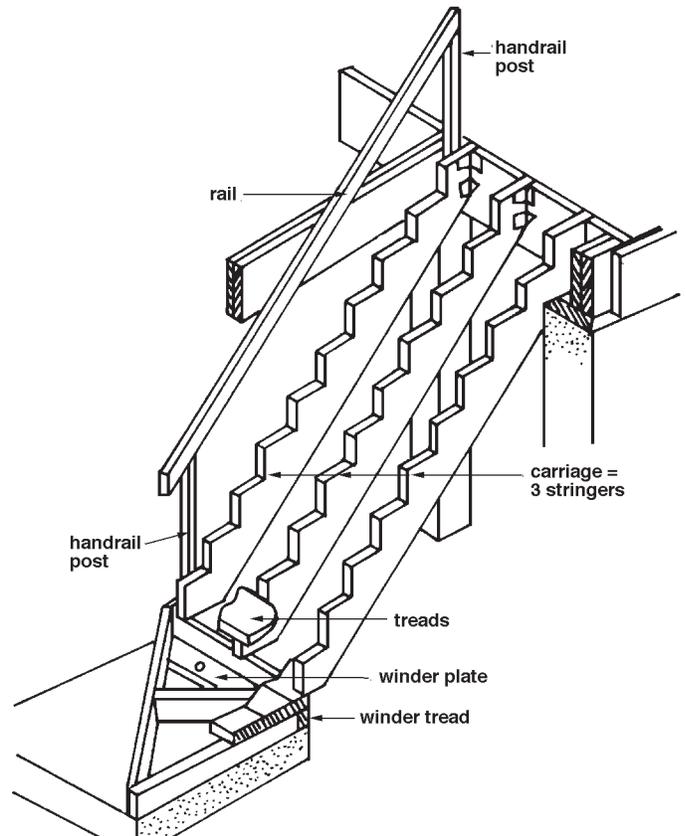


Figure 8. Roof Styles



**Figure 9. Open Framing**



**Figure 10. Stair Framing**