

TRUSS TERMS/DEFINITIONS/GLOSSARY

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ADHESIVE

A substance capable of holding materials together by (sticky) surface attachment. In roof and floor Trusses the term includes cements, mucilage, and chemical and natural glues.

ALLOWABLE STRESS INCREASE

The calculated percentage increase in the stress permitted in a member, based on the length of time that the load causing the calculated stress acts on that member or assembly. The shorter the duration of the load, the higher the percent increase in allowable stress.

ANCHOR (ANCHORING)

The "tying" of a roof or wall component or system down or together to resist racking or lift. Walls can be "anchored" using foundation bolts, straps, and brackets; trusses using brackets, hangers and buckets.

APEX/PEAK

The high point on the Truss where the sloped chords meet. Same as PEAK.

ATTIC SCUTTLE

Framed in the field opening, most often with removable cover, providing access up into the attic.

AXIAL FORCE

The internal force compression or tension, acting along the length of each member. Axial Force is normally expressed in pounds or similar metric equivalent.

BALLOON FRAMING

A continuously framed gable wall where studs form one continuous piece from the floor to the roof. In the balloon method, the gable and the wall are framed all in one piece. Most houses have a rafter set on top of the wall to form the gable, and this is not a preferred method for wind resistance.

BEARING

Structural support, usually a wall, girder or beam, that is specified by the building designer to transmit Truss reaction loads downward to the building foundation. Point of Bearing, normally occurs at the top and/or bottom chord of the Truss.

BEARING AREA

The area, normally expressed in square inches, of the Truss member that is resting on the support.

BENDING MOMENT

The measure of the bending effect on a structural member due to forces acting perpendicular to the length of that member. The bending moment at a given point along a member equals the sum of all perpendicular forces, to either side of that point, times their corresponding distances from the point..

BOB-TAIL

A term used to describe a gable shaped Truss that is clipped at the end.

BOTTOM CHORD UPSET

Same as BUTT CUT

BOTTOM CHORD

A horizontal or inclined (scissors Truss) member that establishes the bottom edge of a Truss, usually carrying combined tension and bending stresses.

BOTTOM CHORD BEARING

Term used to describe the bearing condition of a parallel chord Truss that bears on its bottom chord.

BRIDGING

Wood or metal members that are fastened between Trusses and/or joists in an angled position, usually from the top on one to bottom of the next in a crisscross format, intended to spread and even the loading.

BIRDSMOUTH CUT

An angular notch on the bottom side at the end of a member to allow for an overhang past the outside of the wall onto which it is bearing.

BUILDING DESIGNER

Registered architect or registered engineer who is responsible for the technical design of the building.

BUILT-UP BEAM

A single unit composed of two wooden members having the same thickness, but not necessarily the same depth, which is designed to provide greater load-carrying capability as well as lower deflection.

BUILT-UP ROOF

Roofing composed of three to five layers of asphalt (normally installed on a level or near level roof.)

BUTT CUT

Slight vertical cut at outside edge of Truss bottom chord to ensure uniform nominal span and tight joints.

BUTT JOINT

The interface at which the ends of two members or other members meet in a square cut joint.

CAD

Computer Aided Design and drafting.

CAMBER

An upward curvature built into a Truss to compensate for deflection due to future loading conditions.

CANTILEVER

The part of a Truss that extends beyond its point of bearing/support, exclusive of overhang.

CENTER LINE SPAN

Theoretical span sometimes used to design Trusses.

CLEAR SPAN

Indicates the inside (interior) support/bearing-to-support/bearing dimensions. The unsupported horizontal distance between the inside edges of any two adjacent Truss supports. Not to be confused with SPAN.

CLINCHED NAIL

A nail selected and applied to be abnormally longer than the member that it is driven through and which is then bent back into the dimension of its excess length to strengthen the point of fastening.

CLIPPED (Clipped End)

Same as STUB or STUBBED TRUSS.

COLLAR BEAM

Wooden member connecting opposite roof rafters, often to resist lateral separation forces.

COLLAR TIE

A horizontal member placed between two rafters at a specific vertical distance above the very top plate line for the purpose of limiting outward thrust of the rafters.

COMMON TRUSS

An engineered component shaped so as to have a near equal pitch on both sides of a center peak. See the definition for TRUSS and FLOOR/FLAT TRUSS and click [HERE](#) for a detailed drawing of a common Truss.

COMPOSITE LUMBER (Structural, wood composites)

A family of materials that contain wood in whole and/or fiber form that is bound together with an adhesive as a substitute for dimension lumber.

COMPOUND CUT

A double cut made across the member width.

COMPRESSION

The force within a Truss member that has the effect of tending to apply shortening or compressing pressure that Truss member.

CONNECTOR

A mechanical device for securing two or more Trusses, components, pieces, parts, or members together, including anchors, buckets, straps, wall ties, and fasteners.

CONTRACT DOCUMENTS

Architectural and/or engineering drawings (plans), specifications, etc., used to produce a structure.

CONVENTIONAL FRAMING (Common Framing)

Framing with conventional joists, rafters and wall studs.

CREEP

Time and humidity and temperature caused deformation of a structural member(s) under constant load.

CRICKET

A ridge or drainage flume structure designed to divert roof framing. Generally found on the high sloped end of a chimney or the transition from one roof area to another.

CUTTING SHEETS (Cut Sheet)

A diagram and listing of lumber lengths and angles of cut for Truss web members and chords.

CUTTING BILL

See CUTTING SHEETS

DIRECT NAIL

To nail perpendicular to the member being nailed.

DROP TRUSS

A Truss designed to carry the same loading as other similar Trusses in a given structure, that is built to a given dimension shorter in overall height than the other Trusses in that run, designed to facilitate a double layer of roofing or other covering on the roof, while maintaining the same roof height throughout.

DRYWALL

Interior finish material sheet manufactured with gypsum (gypsum board).

FASCIA

The flat surface located at the outer end of a roof overhang or cantilever end

FEATHER CUT

A heel cut which has been made with a zero butt cut (a sawn member with a feathered edge).

FIREPLACE TRUSS

A Truss fabricated with a modified shape to allow clearance for the penetration of a chimney through the roof, whose loads are supported by a master (girder) Truss. (requires special engineering)

FLOOR/FLAT TRUSS

An engineered component shaped so as to be nearly rectangular. See the definition for TRUSS and ROOF TRUSS and click [HERE](#) for a detailed drawing of a flat Truss.

GABLE END FRAME TRUSS

A component manufactured to the profile of the mating Truss having vertical "in-plane" members fastened to the chords instead of diagonal web members. It is not a structural Truss and requires continuous support by a bearing wall or other load bearing element such as a beam along the bottom chord.

GABLE

The portion of the roof above the eave line of a double sloped (triangle shaped) roof.

GAMBREL

A roof having two slopes on each side, the lower slope usually steeper than the upper.

GIRDER

A beam of wood or steel used as the principal support of concentrated loads at points along its span.

GIRDER TRUSS

A Truss designed and engineered to carry heavy loads transmitted from other structural members bearing upon it. Often a multiple ply Truss.

HARDWARE

A computer and its peripherals (printer, plotter, etc.) other than the software.

HEADER

A conventionally framed wood girder located between stud, jack, tee, joist, rafter, or Truss openings.

HEEL JOINT

The point on a Truss where the top and bottom chords intersect.

HIP MASTER

Hip girder Truss designed to carry prefabricated roof jacks or common framing and hip corners.

HIP TRUSS

A component of a hip roof system of roof Trusses affording symmetry of architectural appearance. The eave line extends to the same level around all sides of the building eliminating the use of gable ends.

Normally the off site manufacture of hip Truss parts aids in speed and quality of field construction.

HURRICANE STRAP or CLIP

Galvanized steel or stainless steel brackets, or thin metal strips used to strengthen "wood to wood" or "wood to concrete" connections. These straps may also be referred to as "hurricane clips."

HYDRAULIC PRESS

A press consisting of a "C" clamp hydraulic cylinder; or an I-beam platen, or flat upper pressing platen, powered by hydraulic cylinders which are used to embed Truss connector plates into the wood.

INTERIOR BEARING

Term used to describe supports which are interior to two exterior supports.

JIG

The fixture which holds the Truss pieces in position until they are rigidly fastened with connectors.

JOINT

See PANEL POINT.

JOIST

A horizontal roof or floor framing member.

KICKER

Alternate expression for a Truss web member cantilever strut.

KNEE BRACE

A brace positioned between a column and Truss panel bearing points when Trusses are supported by columns lacking transverse bracing.

LADDER PANEL

Prefabricated wall panel fastened to the roof eave to create a sloped overhang.

LATERAL BRACING

Members placed and connected at right angles to a chord or web member of a Truss.

LET [the] TAILS RUN

When lumber making up the top chord of a roof Truss is not cut off to a specified length during manufacture, but rather is allowed to retain the random length of the piece of lumber used to fabricate that roof Truss. (Used for the purpose of meeting unspecified roof overhang requirements in the field.)

LEVEL RETURN

A Lumber filler placed horizontally from the end of an overhang tail returning back to the outside wall, to form a soffit that is level with the ground.

LSL - Laminated Strand Lumber

LSL uses timber from logs that are not large, strong, or straight enough to be of structural value in conventional wood products and is most often made from Aspen or Yellow Poplar. 75% of the tree is used. This engineered timber product marketed under the trade name TimberStrand®, this Laminated Strand Lumber (LSL) product, can be up to 60 feet long, 8 feet wide and over 6 inches thick. Beams, headers, decking are the most popular structural applications. As a substitute for traditional framing materials, costs may be higher than dimension lumber. We have, in our opinion only, some question as to its durability and its performance when exposed to moisture. Another possible disadvantage is that it is heavier than an equivalent amount of pine. For instance, in our testing, a 2 x 6, 16 feet in length, weighed approximately 29 pounds. An LSL functional equivalent weighed approximately 43 Pounds.

LVL - Laminated Veneer Lumber

An engineered wood product created by layering selected dried and graded wood veneers with waterproof adhesive into blocks of material known as billets. This product is manufactured to disperse wood's natural defects, such as knots, thus minimizing their effect on performance and stability. Before bonding, the grain of the component wood pieces making up each layer is placed at right angles to the grain of each other successive layer, adding strength and helping to prevent warpage in the finished product. These blocks are then sawn into popular lumber sizes. Marketed under the trade name Microllam®, LVL can be made with wood from smaller, faster-growing trees. Microllam products are typically available in various thicknesses and widths that can be wider in dimension than native grown lumber. LVL is also known as Structural Composite Lumber (SCL).

MEMBER

A load/stress carrying component of a roof Truss or floor (flat) Truss assembly.

MITER CUT

A single cut made at an angle to the length of a member.

MOE - Modulus of Elasticity

An index of the stiffness of a the wood used to manufacture the Truss, applicable to the bending of a beam. Derived by measuring the elastic deformation of the wood as it is placed under stress, and then dividing the stress by the deformation..

MOMENT

A force that produces rotation of a member and commensurate bending stresses.

MPCWT - Metal Plate Connected Wood Truss

One of the methods used to fasten one or more members of of a Truss to others.

MSR - Machine Stress Rated

Lumber that is graded for strength by testing equipment as opposed to visually inspected and rated.

NAIL-ON PLATE

Light-gauge steel Truss connector plates with or without pre-punched holes, through which nails are driven by hand or pneumatic means into the lumber.

NAILER (Scab)

A member fastened to another member by nails for reinforcement.

NATIONAL DESIGN SPECIFICATION (NDS) FOR WOOD CONSTRUCTION

A publication of the American Forest & Paper Association (AFPA) providing an appendix of lumber sizes, grades, species and allowable stresses for each.

NATIONAL DESIGN STANDARD FOR METAL PLATE CONNECTED WOOD TRUSS CONSTRUCTION

A publication of the Truss Plate Institute (TPI), outlining design and performance standards for Trusses to be designated as an ANSI/TPI approved standard product.

NET FREE VENTILATED AREA

Area required by building codes to allow for proper ventilation in enclosed constructed spaces.

NOMINAL SPAN

Horizontal distance between outside edges of the outermost supports.

NOTCH

A vertical and crosswise horizontal cut at the end of the chord, joist or rafter. See BIRDSMOUTH CUT.

ON CENTER (O. C.)

The measurement of spacing for structural members like Trusses, studs, rafters and joists in a building, from the center of one member to the center of the next.

ON EDGE

Vertical placement of a member's wider edge.

ON THE FLAT

Horizontal placement of a member's wide edge.

OUT-TO-OUT SPAN

Same as OVERALL SPAN

OUTRIGGER

A wood member nailed to a Truss to form a roof or balcony overhang beyond the wall line.

OVERALL SPAN

Outside of frame dimensions (not outside of veneer dimensions).

OVERHANG

The extension of the top chord of a Truss beyond the outside of the bearing support.

PCT

Parallel Chord Trusses such as a floor Truss. See example [HERE](#).

P. E.

Designation abbreviation acronym for Licensed Registered Professional Engineer. See typical engineered roof Truss drawing [HERE](#).

PANEL POINT

A point at which one or more web members intersect the top and/or bottom chord.

PANEL

The chord segment defined by two adjacent joints.

PANEL LENGTH

The distance between joints measured along the center line of the chord. See [COMMON TRUSS DETAILS](#).

PEAK/APEX

The high point on the Truss where the sloped chords meet.

PENNY

Common nail length. Originally, nails were sold by "penny weight", or price per hundred.

PIGGYBACK TRUSS

A Truss fabricated in two pieces, often consisting of a hip-profile Truss with a triangular cap fastened to be fastened to it in the field. This Truss design is mandated when shipping, manufacturing and/or architectural requirements or limitations are affected by overall Truss height.

PITCH

The incline angle of the roof/roof Truss and/or the ratio of the total rise of the roof to the total width of a given Truss system. For example, a 10 foot rise and a 30 foot total width yields a roof pitch of one third or 3 in one. Roof pitch is also known as the angle that the top chord makes with the lower chord such as a 20 pitch or a 45 pitch.

PLACING DRAWING/LAYOUT

Line drawing used to locate assumed placement positions of roof and floor Trusses by Truss fabricator.

PLUMB CUT

The end of the top chord is cut to provide for a vertical (plumb) installation of fascia and rain gutter. The other common option is for the Truss tails to be [SQUARE CUT](#).

PLY

The term given to one component Truss layer of a multiple-layer girder Truss.

PPSA - Purdue Plane Structures Analyzer

A wood structures computer program developed at Purdue University.

PRESS

A term used to describe the device used to embed Truss connector plates using compression.

PRESS-ON PLATE

A Truss connector manufactured with pre-formed teeth that are embedded by compression into the lumber, usually by an air, roller or hydraulic press.

PROFILE DRAWING

Sketches of Truss profiles used by mechanical engineer to determine where mechanical ducts, piping, etc., are to be located when installed in the finished construction.

PSL - Parallel Strand Lumber (PSL)

Also known by the trade name Parallam®, this product is made from the fiber on the outermost edges of the log which is often wasted or used in lesser-grade wood products. This patented process produces an engineered product that can be longer, thicker and stronger than timber cut from old growth native forests. PSL lumber is suitable for beams, columns, posts.

PURLIN

A horizontal member attached perpendicular to the Truss top chord for support of the roofing (i.e., corrugated roofing or plywood and shingles).

RACKING

A misshaping of a system, component or frame caused when horizontal loads applied to vertical members displace the frame from the designed triangular or rectangular configuration.

RAFTER

A sloping or pitched member in roof framing.

RAKE

The edge of a roof at the intersection of the gable.

RAKE OVERHANG PANEL

Prefabricated overhang panel that extends over the edge of the roof and is fastened to the gable end Truss, usually in the field.

REVIEWING ENGINEER

The term used to define the Truss engineer who checks and certifies the computer generated designs (CAD) of the Truss fabricator. The reviewing engineer may be an employee experienced in the design and testing of Trusses, and assigned this responsibility by a Truss plate manufacturer. He or she may also be an independent consultant experienced in the design, testing and performance of metal plate connected Trusses, and contracted by the Truss fabricator to perform such services.

RIDGE

The horizontal roof line made by the top surfaces of two sloping roof surfaces

RIDGE VENT

A prefabricated and formed metal strip placed along the apex of the roof to allow exhaust ventilation in combination with intake soffit or gable end ventilation.

RISE

The vertical distance from the bottom of the bottom chord to bottom side of the top chord.

ROLLER PRESS

A press that embeds connector plates by forcing them through the pressure two opposing rollers.

ROOF ASSEMBLY

A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck, or a single component serving as both the roof covering and roof deck. The roof assembly includes Trusses, or roof joists, the roof deck (often plywood,) a vapor 'barrier,' a thermal barrier, insulation and roof covering to keep out the heat or cold, rain and sun.

ROOF SCUTTLE

Framed opening in commercial roofs surrounded by a hinged door used for access to a commercial roof.

ROOF SHEATHING

Most commonly, the boards or sheet material fastened to the roof Trusses or roof rafters onto which the shingle or other roof covering, weather repelling material is laid.

ROOF TRUSS

The basic components of a roof Truss are the top and bottom chords and the web members. The top chords serve as roof rafters. The bottom chords act as ceiling joists. The web members run between the top and bottom chords. The Truss parts are usually made of 2 by 4 inch or 2 by 6 inch material and are fastened together with special metal connector/nail plates.

Roof Trusses are common and are designed and produced in a variety of shapes and sizes. The most commonly used roof Trusses, are in light-frame construction and are the king-post, the W-type, and the scissors Trusses. The most simple type of Truss used in frame construction is the king-post Truss. It is mainly used for spans up to 22 feet. The most widely used Truss in light-frame construction is the W-type Truss. The W-type Truss can be placed over spans up to 50 feet. The scissors, or cathedral Truss is used for buildings with sloping ceilings. Generally, the slope of the bottom chord equals one-half the slope of the top chord. It can be placed over spans up to 50 feet. see TRUSS.

SCUPPER

Provision for roof drainage pipe or duct.

SCL - Structural Composite Lumber

See LVL, above.

SET BACK

The distance from the outside edge of a bearing wall, exclusive of any wall veneer or non-structural covering, to the face of a hip master (girder) Truss.

SHEATHING

The material, most often plywood, covering the frame, walls and roof Trusses, on the exterior.

SHOP DRAWING

A drawing of roof Trusses prepared by a Truss fabricator from stock Truss engineering drawings, used to specify and fabricate Trusses. See typical engineered roof Truss drawing [HERE](#).

SHOULDER JOINT

Same as BREAK POINT JOINT.

SISTER TRUSS (Joist)

Sistering is the popular term for the reinforcement of a Truss or joist by bolting, nailing, or otherwise attaching alongside the existing Truss or joist, another Truss or joist or reinforcing member. The second member is referred to as the 'SISTER' component.

SLIDER

Nominal two inch dimension lumber inserted between the top and bottom chords at the heel joint in the plane of the Truss to reinforce the top or bottom chord.

SLOPE

The incline angle of the roof described in inches of rise per foot of run (e.g., 4/12).

SLOPED SOFFIT

Any sloped overhang as compared to a level soffit return .

SOFFIT VENTS

Prefabricated soffit material with perforated or slotted openings created for the purpose of providing and enhancing intake roof ventilation.

SOFFIT

The underside of a roof overhang or Truss cantilever end. A soffit is normally ventilated.

SOFT STORY

A habitable room or rooms above a living, working or storage area such as garage, carport, or other area, that was not engineered to transmit shear and lateral forces appropriately. [If supporting walls and roof systems are not designed to handle loading forces, the entire structure may fail.]

SOFTWARE

Computer programs used to create management and engineering information, etc.

SPAN

The term generally used to communicate outside-to-outside or overall span of a Truss design. Also sometimes indicates the center line to centerline of bearing.

SPLICE POINT

The point at which two chord members are joined together to form a single member. It may occur at a panel point or between panel points.

SQUARE CUT

The tail end of the top chord that is cut so as to be perpendicular to the slope of the member at 90 degrees to the length of that member (most economical construction; see [PLUMB CUT](#).)

STACKED CHORDS

The term most often used for agricultural Trusses when two members are positioned on top of each other to create a bottom chord.

STRINGER

Lumber industry terminology for lumber graded with respect to its strength in bending when loaded on the narrow dimension face. Used for cross members in floors or ceilings.

STRONGBACK

A nominal two inch thick framing member attached in the perpendicular to floor or roof Trusses; placed vertically against the vertical Truss web.

STUB TRUSS

Same as BOB TAILED TRUSS

STUDDED GABLE

Terminology for a gable end Truss built as a wall and resembling a stud wall built in the shape of a triangle. These chords are usually on the flat.

SUBSTRATE

The surface upon which the roofing membrane is placed.

SUPPORT (TRUSS SUPPORT)

The device, fixture or area designed to receive, hold and support the weight. live load and dead load, of each of the Truss members in the system.

T-BRACE

A brace consisting of nominal two inch dimension lumber nailed directly to the member requiring a brace, and with the width of the member perpendicular to the width of the brace.

THRUST

The term used to describe outward horizontal force.

TOE NAIL

A nail driven at an angle to fasten one member to another.

TOP CHORD BEARING

The bearing condition of a parallel or sloping chord Truss that bears on its top chord extension.

TOP PLATE

Framing consisting of two members on the flat that form the top of the exterior wood bearing walls of platform frame construction. Also, a single member on the flat in non-bearing wall construction.

TOP CHORD

An inclined or horizontal member that establishes the top surface member of a Truss.

TRIMMER

A conventionally framed wall member usually consisting of fastened multiple studs in a framed wall opening, used to carry header load reaction. The trimmer is the shorter member of the fabricated unit.

TRUSS (see Roof Truss)

An engineered pre-built component, designed to carry its own weight and added superimposed design loads, that most often functions as a structural support member. A Truss, most often made of wood, employs one or more triangles in its construction. Made from dimension lumber of various sizes, the chords and webs are most often connected together by the use of toothed connector plates which transfer the tensile and shear forces. Metal connector plates are stamped from galvanized steel sheet metal of varying grades and gauge thicknesses to provide different grip values. See [COMMON TRUSS DETAILS](#).

TRUSS CLIP

A metal component designed to provide the structural connection of roof or floor Trusses to wall plates in order to facilitate resistance to wind uplift forces.

 TRUSS FRAME (Truss-Frame)

The product of the structural connection of an upper Truss to a lower Truss by its integral wall members. View a technical drawing of a typical Truss-Frame component, [HERE](#).

TRUSS LAYOUT

A technical drawing, produced by the Truss engineer, illustrating the precise inter-relation of Truss components and their final placement location on the final structural assembly. View sample [HERE](#).

TRUSS SYSTEM

An assemblage of floor and/or roof Trusses, and/or Truss Frame components and Truss girders, together with all bracing, connections, and other structural elements and all spatial and locational criteria, that, in combination, function to support the dead, live and wind loads applicable to the roof of a structure, with respect to a Truss system for the roof, and/or the floor of a structure with respect to a Truss system for the floor. A Truss System does not include foundations, or any other structural support system.

UPLIFT

Wind, increased in speed, moving over a structure causing negative wind pressure (suction) to be placed inside an enclosed structure, creating uplift forces (upward pull) capable of blowing off the roof. Roofs are designed to resist only certain uplift caused when high winds travel over and across the roof.

WEBS/WEBBING

The term often given to the shorter members that join the top and bottom chords of a roof or floor Truss, which form triangular patterns in that Truss, usually carrying. transmitting tension or compression stresses, and are designed to prevent bending and/or flexing.

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