

Glossary

A handy reference guide to lock down the basics of cold-formed steel framing, from A to Z, built from the AISI S240-15, *North American Standard for Cold-Formed Steel Structural Framing, 2015 Edition*.

INDICATES TERM IS CFS FRAMING-SPECIFIC

ADJUSTED SHEAR RESISTANCE

In Type II shear walls, the unadjusted shear resistance multiplied by the shear resistance adjustment factor.

ALLOWABLE STRENGTH

Nominal strength divided by the safety factor R_n/Ω . [USA and Mexico]

APPLICABLE BUILDING CODE

The building code under which the building is designed.

APPROVED

Acceptable to the authority having jurisdiction.

ASD (ALLOWABLE STRENGTH DESIGN)

Method of proportioning structural components such that the allowable strength equals or exceeds the required strength of the component under the action of the ASD load combinations. [USA and Mexico]

ASD LOAD COMBINATION

Load combination in the applicable building code intended for allowable strength design (allowable stress design). [USA and Mexico]

AUTHORITY HAVING JURISDICTION

An organization, political subdivision, office, or individual charged with the responsibility of administering and enforcing the provisions of the applicable building code.

AVAILABLE STRENGTH

Design strength or allowable strength, as appropriate. [USA and Mexico]

BASE STEEL THICKNESS

The thickness of bare steel exclusive of all coatings.

BEARING STIFFENER

Additional material that is attached to the web to strengthen the member against web crippling. Also called a web stiffener.

BLOCKING

C-shaped member, break shape, flat strap material, or component assemblies attached to structural members, flat strap or sheathing panels to transfer shear forces or stabilize members.

BLOCKING, PANEL

Blocking that transmits shear between the panels of a shear wall or diaphragm.

BLOCKING, STUD

Blocking that provides torsional restraint to the studs in a shear wall.

BRACING

Structural elements that are installed to provide restraint or support (or both) to other structural members or nonstructural members so that the complete assembly forms a stable structure.

CEILING JOIST

A horizontal structural member that supports ceiling components and which may be subject to attic loads.

CHORD

Member of a shear wall, strap braced wall or diaphragm that forms the perimeter, interior opening, discontinuity or re-entrant corner.

CHORD MEMBER

A structural member that forms the top or bottom component of a truss.

CHORD SPLICE

The connection region between two truss chord members where there is no change in slope.

CHORD STUD

Axial load-bearing studs located at the ends of Type I shear walls or Type II shear wall segments or strap braced walls.

CLIP ANGLE

An L-shaped short piece of steel typically used for connections.

COLD-FORMED SHEET STEEL

Sheet steel or strip steel that is manufactured by (1) press braking blanks sheared from sheets or cut length of coils or plates, or by (2) continuous roll forming of cold- or hot-rolled coils of sheet steel; both forming operations are performed at ambient room temperature, that is, without any addition of heat such as would be required for hot forming.

COLD-FORMED STEEL

See Cold-Formed Sheet Steel.

COLLECTOR

Also known as a drag strut, a member parallel to the applied load that serves to transfer forces between diaphragms and members of the lateral force-resisting system or distributes forces within the diaphragm.

COLLECTOR

See Structural Component.

COMPONENT ASSEMBLY

A fabricated assemblage which consists primarily of cold-formed steel structural members that is manufactured by the component manufacturer.

COMPONENT MANUFACTURER

The individual or organization responsible for the manufacturing of component assemblies for the project. Also referred to as truss manufacturer on projects involving trusses, but hereinafter will be referred to as component manufacturer.

CONNECTION

Combination of structural elements and joints used to transmit forces between two or more members.

CONNECTOR

A device used to transmit forces between cold-formed steel structural members, or between a cold-formed steel structural member and another structural element.

CONTRACTOR

Owner of the building, or the person that contracts with the owner, who constructs or manages the construction of the building in accordance with the construction documents. Also referred to as owner's representative for construction, but hereinafter will be referred to as contractor.

CONSTRUCTION DOCUMENTS

Written, graphic and pictorial documents prepared or assembled for describing the design (including the structural system), location and physical characteristics of the elements of a building necessary to obtain a building permit and construct a building.

CRIPPLE STUD

A stud that is placed between a header and a window or door head track, a header and wall top track, or a window sill and a bottom track to provide a backing to attach finishing and sheathing material.

C-SHAPE

A cold-formed steel shape used for structural members and nonstructural members consisting of a web, two (2) flanges and two (2) lips (edge stiffeners).

CURTAIN WALL

A wall that transfers transverse (out-of-plane) loads and is limited to a superimposed vertical load, exclusive of sheathing materials, of not more than 100 lb/ft (1.46 kN/m), or a superimposed vertical load of not more than 200 lbs (0.890 kN).

DEFLECTION TRACK

A track manufactured with extended flanges and used at the top of a wall to provide for vertical movement of the structure, independent of the wall stud.

DESIGN LOAD

Applied load determined in accordance with either LRFD load combinations or ASD load combinations, whichever is applicable. [USA and Mexico]

DESIGN STRENGTH

Resistance factor multiplied by the nominal strength. [USA and Mexico]

DESIGN THICKNESS

The steel thickness used in design.

DESIGNATION THICKNESS

The minimum base steel thickness expressed in mils and rounded to a whole number.

DIAPHRAGM

Roof, floor or other membrane or bracing system that transfers in-plane forces to the lateral force-resisting system.

EAVE OVERHANG

The horizontal projection of the roof measured from the outside face of exterior wall framing to the outside edge of the roof.

EDGE STIFFENER

See Lip.

FACTORED LOAD

Product of a load factor and the nominal load [specified load].

FACTORED RESISTANCE

Product of nominal resistance and appropriate resistance factor. [Canada]

FIBERBOARD

A fibrous, homogeneous panel made from lignocellulosic fibers (usually wood or cane) and having a density of less than 31 pounds per cubic foot (pcf) (497 kg/m³) but more than 10 pcf (160 kg/m³).

FLANGE

For a C-shape, U-shape or track, that portion of the structural member or nonstructural member that is perpendicular to the web. For a furring channel, that portion of the structural member or nonstructural member that connects the webs.

FLOOR JOIST

A horizontal structural member that supports floor loads and superimposed vertical loads.

GIRT

Horizontal structural member that supports wall panels and is primarily subjected to bending under horizontal loads, such as wind load.

GRADE

The designation of the minimum yield strength.

GUSSET PLATE

A structural member used to facilitate the connection of truss chord or web members at a heel, ridge, other pitch break, or panel point.

HAT-SHAPE

A singly symmetric shape consisting of at least two vertical webs and a horizontal stiffened flange which is used as a chord member in a truss.

HEADER

A horizontal structural member used over floor, roof or wall openings to transfer loads around the opening to supporting structural members.

HEEL

The connection region between the top and bottom truss chords of a non-parallel chord truss.

HOLD-DOWN (TIE-DOWN)

A device used to resist overturning forces in a shear wall or strap braced wall, or uplift forces in a cold-formed steel structural member.

INSPECTION

When used in conjunction with quality control and quality assurance, it shall mean the systematic examination and review of the work for compliance with the appropriate documents, with appropriate subsequent documentation.

INSTALLATION DRAWINGS

Drawings that show the location and installation of the cold-formed steel structural framing. Also referred to as truss placement diagram for truss construction.

INSTALLER

Party responsible for the installation of cold-formed steel light-frame construction.

JACK STUD

A stud that does not span the full height of the wall and provides bearing for headers.

JOIST

A structural member primarily used in floor and ceiling framing.

KING STUD

A stud, adjacent to a jack stud, that spans the full height of the wall and supports vertical and lateral loads.

LATERAL FORCE-RESISTING SYSTEM

The structural elements and connections required to resist racking and overturning due to wind forces or seismic forces, or other predominantly horizontal forces, or combination thereof, imposed upon the structure in accordance with the applicable building code.

LIGHT-FRAME CONSTRUCTION

Construction where the vertical and horizontal structural elements are primarily formed by a system of repetitive cold-formed steel or wood framing members.

LIMIT STATES

Those conditions in which a structural member ceases to fulfill the function for which it was designed. Those states concerning safety are called the ultimate limit states. The ultimate limit state for strength is the maximum load-carrying capacity. Limit states that restrict the intended use of a member for reasons other than safety, such as deflection and vibration, are called serviceability limit states. [Canada]

LIP

That part of a structural or nonstructural member that extends from the flange as a stiffening element.

LOAD

Force or other action that results from the weight of building materials, occupants and their possessions, environmental effects, differential movement, or restrained dimensional changes.

LOAD EFFECT

Forces, stresses, and deformations produced in a structural component by the applied loads.

LOAD FACTOR

Factor that accounts for deviations of the actual load from the nominal load, for uncertainties in the analysis that transforms the load into a load effect, and for the probability that more than one extreme load will occur simultaneously. [USA and Mexico]

LRFD (LOAD AND RESISTANCE FACTOR DESIGN)

Method of proportioning structural components such that the design strength equals or exceeds the required strength of the component under the action of the LRFD load combinations. [USA and Mexico]

LRFD LOAD COMBINATION

Load combination in the applicable building code intended for strength design (Load and Resistance Factor Design). [USA and Mexico]

LSD (LIMIT STATES DESIGN)

Method of proportioning structural components (members, connectors, connecting elements and assemblages) such that no applicable limit state is exceeded when the structure is subjected to all appropriate load combinations. [Canada]

MEAN ROOF HEIGHT

The average of the roof eave height and the height to the highest point on the roof surface, except that eave height shall be used for roof angles less than or equal to 10 degrees (0.18 rad).

MIL

A unit of measurement equal to 1/1000 inch.

MULTIPLE SPAN

The span made by a continuous member having intermediate supports.

NOMINAL LOAD

Magnitude of the load specified by the applicable building code. [USA and Mexico]

NOMINAL RESISTANCE (RESISTANCE)

Capacity of a structure or component to resist the effects of loads, determined in accordance with this Standard using specified material strengths and dimensions. [Canada]

NOMINAL STRENGTH

Strength of a structure or component (without the resistance factor or safety factor applied) to resist the load effects, as determined in accordance with this Standard. [USA and Mexico]

NONSTRUCTURAL MEMBER

A member in a steel-framed system that is not a part of the gravity load-resisting system, lateral force-resisting system or building envelope.

OWNER

The individual or entity organizing and financing the design and construction of the project.

PANEL POINT

The connection region between a web member and chord member in a truss.

PITCH BREAK

The connection region between two truss chord members where there is a change in slope, excluding the heel.

PLANS

Also referred to as construction drawings. Drawings prepared by the building designer for the owner of the project. These drawings include but are not limited to floor plans, framing plans, elevations, sections, details and schedules as necessary to define the desired construction.

PLAN ASPECT RATIO

The ratio of the length (longer dimension) to the width (shorter dimension) of the building.

PUNCHOUT

A hole made during the manufacturing process in the web of a steel framing member.

PURLIN

Horizontal structural member that supports roof deck and is primarily subjected to bending under vertical loads such as snow, wind, or dead loads.

QUALITY ASSURANCE

Monitoring and inspection tasks performed by a registered design professional, firm or approved agency other than the component manufacturer or installer to ensure that the material provided and work performed by the component manufacturer and installer meet the requirements of the approved construction documents and referenced standards. Quality assurance includes those tasks designated "special inspection" by the applicable building code.

QUALITY ASSURANCE INSPECTOR

Individual or agency designated to provide quality assurance inspection for the work being performed.

QUALITY CONTROL

Controls and inspections implemented by the component manufacturer or installer to confirm that the material provided and work performed meet the requirements of the approved construction documents and referenced standards.

QUALITY CONTROL INSPECTOR

Individual or agency designated to perform quality control inspection tasks for the work being performed.

QUALITY CONTROL PROGRAM

Program in which the component manufacturer or installer, as applicable, maintains detailed assembly or installation and inspection procedures to ensure conformance with the approved installation drawings, plans, specifications and referenced standards.

RAKE OVERHANG

The horizontal projection of the roof measured from the outside face of a gable endwall to the outside edge of the roof.

RATIONAL ENGINEERING ANALYSIS

Analysis based on theory that is appropriate for the situation, any relevant test data, if available, and sound engineering judgment.

REGISTERED DESIGN PROFESSIONAL

Architect or engineer who is licensed to practice their respective design profession as defined by the legal requirements of the jurisdiction in which the building is to be constructed.

REPETITIVE FRAMING

A framing system where the wall, floor and roof structural members are spaced no greater than 24 inches (610 mm) on center. Larger spaces are permitted at openings where the structural loads are transferred to headers or lintels and supporting studs, joists or rafters.

REQUIRED STRENGTH

Forces, stresses, and deformations produced in a structural component, determined by either structural analysis, for the LRFD or ASD load combinations, as appropriate, or as specified by this Standard. [USA and Mexico]

RESISTANCE FACTOR (ϕ)

Factor that accounts for unavoidable deviations of the actual strength from the nominal strength [nominal resistance] and for the manner and consequences of failure.

RIDGE

The horizontal line formed by the joining of the top edges of two upward sloping roof surfaces.

RIM TRACK

A horizontal structural member that is connected to the end of a floor joist.

RISK CATEGORY

A categorization of buildings and other structures for determination of flood, wind, snow, ice, and earthquake loads based on the risk associated with unacceptable performance.

ROOF RAFTER

A horizontal or sloped, structural member that supports roof loads.

SAFETY FACTOR (Ω)

Factor that accounts for the desired level of safety, including deviations of the actual load from the nominal load and uncertainties in the analysis that transforms the load into a load effect, in determining the nominal strength and for the manner and consequences of failure. [USA and Mexico]

SEISMIC DESIGN CATEGORY (SDC)

A classification assigned by the applicable building code to a structure based upon its risk category and the severity of the design earthquake ground motion at the site.

SEISMIC FORCE-RESISTING SYSTEM

That part of the structural system that has been selected in the design to provide energy dissipation and the required resistance to seismic forces prescribed in the applicable building code.

SHEAR WALL

A wall with structural sheathing attached to cold-formed steel structural members and designed to primarily resist lateral forces parallel to the wall.

SHOP DRAWINGS

Drawings for the production of individual component assemblies for the project.

SINGLE SPAN

The span made by one continuous structural member without any intermediate supports.

SPAN

The clear horizontal distance between bearing supports.

SPECIFICATIONS

Written instructions, which, with the plans, define the materials, standards, design of the products, and workmanship expected on a construction project.

SPECIFIED LOAD

Magnitude of the load specified by the applicable building code, not including load factors. [Canada]

STATIC LOAD

A load or series of loads that are supported by or are applied to a structure so gradually that forces caused by change in momentum of the load and structural elements can be neglected and all parts of the system at any instant are essentially in equilibrium.

STEEL SHEET SHEATHING

A panel of thin flat steel sheet.

STRAP

Flat or coiled sheet steel material typically used for bracing or blocking, which transfers loads by tension or shear.

STRAP BRACED WALL

A wall with strap bracing attached to cold-formed steel structural members and designed to primarily resist lateral forces parallel to the wall.

STRAP BRACING

Steel straps applied diagonally to form a vertical truss that forms part of the lateral force-resisting system.

STRUCTURAL COMPONENT

Member, connector, connecting element or assemblage.

STRUCTURAL MEMBER

A member that resists design loads [factored loads], as required by the applicable building code, except when defined as a nonstructural member.

STRUCTURAL SHEATHING

The structural sheathing that is capable of distributing loads, bracing members, and providing additional stability that strengthens the assembly.

STUD

A vertical structural member or nonstructural member in a wall system or assembly.

TRACK

A structural member or nonstructural member consisting of only a web and two (2) flanges. Track web depth measurements are taken to the inside of the flanges.

TRUSS

A coplanar system of structural members joined together at their ends typically to construct a series of triangles that form a stable beam-like framework.

TRUSS DESIGN DRAWING

Written, graphic and pictorial depiction of an individual truss.

TRUSS DESIGN ENGINEER

Person who is licensed to practice engineering as defined by the legal requirements of the jurisdiction in which the building is to be constructed and who supervises the preparation of the truss design drawings.

TRUSS DESIGNER

Person responsible for the preparation of the truss design drawings.

TRUSS MANUFACTURER

An individual or organization engaged in the manufacturing of site-built or in-plant trusses.

TRUSS MEMBER

A chord member or web member of a truss.

TYPE I SHEAR WALL

Wall designed to resist in-plane lateral forces that is fully sheathed and that is provided with hold-downs at each end of the wall segment.

TYPE II SHEAR WALL

Wall designed to resist in-plane lateral forces that is sheathed with wood structural panels or steel sheet sheathing that contains openings, but which has not been specifically designed and detailed for force transfer around wall openings. Hold-downs for Type II shear walls are only required at the ends of the wall.

TYPE II SHEAR WALL SEGMENT

Section of shear wall (within a Type II shear wall) with full-height sheathing (i.e., with no openings) and which meets specific aspect ratio limits.

WALL PIER

A section of a Type I shear wall adjacent to an opening and equal in height to the opening, which is designed to resist lateral forces in the plane of the wall.

WEB

That portion of a structural member or nonstructural member that connects the flanges.

WEB MEMBER

A structural member in a truss that is connected to the top and bottom chords, but is not a chord member.

WIND EXPOSURE

Wind exposure in accordance with the applicable building code.

WOOD STRUCTURAL PANEL

A panel manufactured from veneers, wood strands or wafers or a combination of veneer and wood strands or wafers bonded together with waterproof synthetic resins or other suitable bonding systems.

YIELD STRENGTH

Stress at which a material exhibits a specified limiting deviation from the proportionality of stress to strain as defined by ASTM.

Z-SHAPE


A point-symmetric or non-symmetric section that is used as a chord member in a truss.

About BuildSteel

BuildSteel provides valuable resources, education, and complimentary project assistance related to the use of cold-formed steel framing in low and mid-rise and multi-family construction projects.

As a centralized source for information, BuildSteel offers resources to help move your next cold-formed steel framing project forward efficiently and effectively.

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