

# Federal Steel Systems: Metal Building Terminology

## A.

### ***Accessory:***

An extra building component added to a building such as doors, windows, ridge vents, louver vents, insulation, gutter and downspouts, canopies, skylights, cupolas etc. Accessories can be purchased with the building or at a later date.

### ***Aluminized:***

Aluminum coated steel.

### ***Anchor Bolts:***

Anchor Bolts are typically set in concrete and used to anchor structural members to the foundation. Anchor bolts can also be drilled and set with epoxy if need be. These bolts are not supplied by Federal Steel Systems but the concrete contractor will usually provide them.

### ***Approval Drawing:***

A product drawing sent to the customer to verify design and dimensions and to verify the sales contract description of materials and services the manufacturer has agreed to furnish.

### ***Astragal:***

A closure between the two leaves of a double swing or a double slide door used to close the joint.

### ***Auxiliary Loads:***

All specified dynamic live loads other than the basic design loads which the building must safely withstand - such as cranes, material handling systems and impact loads.

## B.

### ***Base Angle:***

A continuous angle secured to foundation to support wall panels. Federal Steel Systems supplies this angle where design requires a base angle.

### ***Base Plate:***

A shop-welded, pre-punched plate on that portion of a beam or column which rests on the supporting surface.

### ***Base Trim:***

Together with the base angle forms a tight seal keeping out water, dirt and critters. Also makes erection easier, faster and makes the building more attractive. We provide 26ga steel base trim. Colors to be coordinated with our Color Chart.

### ***Batten:***

A broad, formed strip of metal put over a roof seam for decorative purposes and to conceal fasteners.

***Bay:***

The space between frame center lines or primary supporting members in the longitudinal direction of the building.

***Bay-Interior:***

The distance from centerline to centerline of two interior columns.

***Bead Mastic:***

Sealant furnished in a continuous roll, normally used for sealing roof panel laps.

***Beam:***

A structural member which is ordinarily subject to bending and is usually a horizontal member carrying vertical loads.

***Bearing Frame Endwall:***

Frame composed of corner columns, end columns, flush girts, and channel rafter beams, which is designed to carry one-half bay weight. This type of endwall is also referred to as "cold formed".

***Bird Screen:***

Wire mesh used to prevent birds from entering the building through ventilators and louvers.

***Blind Rivet:***

A small headed pin with expandable shank for joining light gage metal. Typically used to attach flashing, gutter, etc. also referred to as Pop Rivet.

***Brace Rods:***

Rods used primarily on roof and sidewalls of RF (Rigid Frame) or BC (Beam & Column) buildings for plumbing the structures and to transfer wind force to foundation. The alternative to X-bracing would be to use wind columns or portal frames.

***Bracket:***

A structural support projecting from a wall or column on which another structural member is fastened. Example: Crane runway brackets.

***Bridge Crane:***

A material handling system within a building which moves longitudinally on a runway constructed of rails and beams.

***Bridging:***

Structural member used to give weak axis stability to joist or purlins.

***Building Codes:***

Published regulations and ordinances established by a recognized agency describing design loads, procedures and construction details for structures. Building codes control design, construction and quality of materials, use and occupancy, location and maintenance of buildings and structures within the city, county, state, etc. for which the code was adopted. It is the customer's ultimate responsibility to provide Federal Steel Systems with the proper codes for their particular area as per the MBMA guidelines.

***Built-Up Member or Section:***

A structural member, usually an "I" section, made from individual web, flange and base plates by welding them together.

***Butt Plate (or Splice Plate):***

The prepunched end plate of a structural member which usually rests against a matching plate of another member in forming a bolted connection.

***By-Pass Girts:***

Girts which overlap outside column flange to form a continuous member.

C.

***"C" Section:***

A member cold-formed from steel coil in the shape of a "C", used primarily in bearing frame endwalls and framed openings.

***Canopy:***

Any overhanging or projecting structure with extreme end usually unsupported. Canopies can either be standard pre-designed kits or fully custom.

***Cantilever:***

A projecting beam that is supported and restrained at one end only.

***Cap Plate:***

A plate located at the top of a column or end of a beam for capping the exposed end of the member. Used for pinned conditions.

***Caulk:***

To seal and make weather tight joints, seams or voids by filling with waterproofing compound or material.

***Chalking:***

A process by which finishes develop a loose powdery surface resulting from decomposition of the binder, principally through the action of ultraviolet rays.

***Channel:***

An open-ended "C" shape with no return lips, which may be either cold-formed or hot-rolled.

***Clear Span:***

A clear span building has no internal supports. The entire space under the roof is usable.

***Clip:***

A small fastening device, usually of metal, designed to hold a panel or component in place.

***Clip-Angle:***

An angle used for fastening various members together.

***Closure Strip:***

Closure strips are made from a foam material used to seal the edge of a panel to trim or structural members. Closures are shaped to exactly match the profile of the panel they are being used with. Closures can be used behind the panel or on top of the panel depending on the location.

***Cold-Formed:***

Various shapes such as angles, channels, girts and purlins formed from steel at room temperature.

***Column:***

A vertical structural member.

***Continuous Girt or Purlin:***

Girt or purlin that overlaps at columns or frames to form a continuous member.

***Continuous Ridge Vent:***

Ridge vents are 9" or 12" wide and 10' long. They are mounted along the roof peak line. They can be either galvalume or color depending on you building.

***Coping:***

The top course or cover of a wall, usually made sloping to carry off the water.

***Corner Column:***

Corner column (usually a "C" shape) located at the corner of a bearing frame endwall.

***Corner Trim:***

Preformed color 26ga sheet metal trim used to close the junction of side and endwall sheets. Corner trim can match the wall color or not depending on you preference.

***Corrosion:***

The electrochemical degradation of metals due to reaction with their environment.

***Crane Rail:***

Runway beams are mounted from rigid frame to rigid frame and support a bridge, under hung or monorail crane. Federal Steel Systems can supply these beams or the crane supply can supply this material.

***Crane Runway Beam:***

Support for bridge crane.

***Curb:***

Raised flashing around a roof accessory to provide water rightness at the roof opening.

***Curtain Wall:***

Perimeter wall panels which carry only their own weight.

***Certification:***

A written declaration that a particular product or service complies with stated criteria. In specific use, it is necessary to include the scope and limitations of the certifications; usually it is provided by the manufacturer, producer or vendor.

**D.**

***Damper:***

A baffle used to open or close the throat of ventilators.

***Dead Load:***

The dead load refers to the weight of the structure itself plus any permanent stationary loads. Typically the dead load is 2 psf for the standard roof material. This load can be adjusted if the roof material is different.

***Deck:***

The structural surface to which roofing or waterproofing system (including insulation) is applied.

***Deflection:***

The transverse displacement of a structural member in the direction of load and measured from its no-load position.

***Diaphragm Action:***

The action of wall panels on flush-framed walls to act as one unit to resist longitudinal wind force.

***Downspout:***

A hollow rectangular, square or round tubular section used to carry water from a gutter to the ground.

***Drawing:***

An architectural, structural, mechanical or electrical plan, elevation or section indicating in isometric or in axonometric perspective, the detailed location, dimension, quantity or extent of material, product or member to be furnished.

***Driftpin:***

A tapered pin used to align holes in steel members to be connected. Also called "Spud Wrench".

***Drip Edge:***

A metal strip placed along the edge of a roof to divert water.

**E.**

***Eave:***

The line along the top of the sidewall, formed by the intersection of roof and wall panels.

***Eave Canopy:***

A roof extension beyond the sidewall of building. May also be cantilevered below the eave.

***Eave Height:***

Eave height refers to the vertical dimension from finished floor to top of eave strut. The height of the roof panel is not included in the eave height.

***Eave Strut:***

A cold-formed structural member at the eave to support roof and wall panels; also transmits forces due to wind on endwall from roof brace rods to wall brace rods.

***Eave Strut Gusset:***

A small gusset shop-welded to main frame on RF and BC buildings to support eave struts and afford alignment with by-framed girts.

***Eave Trim:***

Trim used to close off top of sidewall panels in lieu of eave gutter.

***Embossed:***

Depressing the metal using a patterned roll to transfer pattern to the metal.

***Equipment Screen:***

Metal panels attached horizontally to a roof to conceal air conditioning units, heating units, exhaust fans, etc.

***Erection:***

The on-site assembly of pre-engineered components to form complete structure.

***Expansion Joint:***

A break of space in construction to allow for thermal expansion and contraction.

## **F.**

### ***Fabricate:***

To manufacture, form, construct or assemble a product or component.

### ***Fading:***

A color change that involves a lightening or weakening of the color which may involve a change in hue.

### ***Fascia, Facia:***

Decorative trim or panel projecting from the face of a wall.

### ***Fastener:***

Fasteners are clips or screws used to attach panels to the structure and to each other. A typical fastener is self drilling and self tapping. Exterior fasteners are color matched to the panel so they blend in nicely. Exterior fasteners also have an encapsulated rubber washer so they are weather tight.

### ***Finish:***

(1) The final treatment or coating of a surface or (2) the fine or decorative work required to make a building or its parts complete.

### ***Fixed base:***

A vertical structural member, bolted to and positioned at 90 degree to a sidewall column to provide additional base fastening and to prevent column rotation.

### ***Flange:***

The projecting edge of a structural member.

### ***Flange Brace:***

A brace from flange of column or rafter to girt or purlin to provide lateral support and stability.

### ***Flashing:***

The system used to seal membrane edgings at walls, expansion joints, drains, gravel stops and other places where the membrane, cap or counter flashing shields the upper edges of the base flashing.

### ***Fluoropolymer:***

Fluoropolymer is a type of paint finish that carries a 35 year warranty. Trade names are Kynar 500 and Hylar 6000.

### ***Footing:***

A pad or mat, usually concrete, located under a column, wall, or other structural member, used to distribute loads from the member into supporting soil.

### ***Foundation:***

The foundation is the substructure on which a building rests. Typically foundations are made of reinforced concrete with footing for columns to rest.

### ***Frame:***

Primary structural members, made up of columns and rafters, which support the secondary framing.

### ***Framed Opening:***

Opening in a wall that is framed with light gage members.

## **G.**

### ***G-90:***

A typical coating weight for galvanized steel sheet. Equates to .090 oz. of zinc per square foot, total both sides.

### ***Gable:***

A triangular portion of the endwall of a building, directly under the sloping roof and above the eave height line.

### ***Galvalume:***

The patented trade name by Bethlehem Steel Company for the aluminum-zinc alloy applied to sheet steel for corrosion resistance. This coating is applied to the base material for all sheeting and trim material.

### ***Galvanized Steel:***

Steel coated with zinc for corrosion resistance.

### ***Gauge/Gage:***

(1) In metal products, a number designating a specific thickness of metal sheet, or diameter of wire, cable or fastener shank tabulated in a standardized series, each of which represents a decimal fraction of an inch (or millimeter). (2) Distance in inches (or millimeters) between adjacent lines of holes or fasteners.

### ***Girder:***

A main horizontal or near horizontal structural member that supports vertical loads.

### ***Girt:***

A secondary horizontal structural member attached to sidewall or endwall columns to which wall covering is attached and supported horizontally; usually a cold-formed "Z" shape.

### ***Glaze or Glazing:***

The process of installing glass in window or door openings.

### ***Gloss:***

Subjective term describing the relative amount and nature of mirror-like reflection from a surface.

### ***Grout:***

A mixture of cement, sand and water used to fill cracks and cavities. Often used under base plates to obtain uniform bearing surfaces.

### ***Guideline:***

A written statement or outline of a policy, practice or conduct. Guidelines may propose options to enable a user to satisfy provisions of a code, standard, regulation or recommendation.

### ***Gusset Plate:***

A steel plate used to connect two or more structural members in the same plane.

### ***Gutter:***

Gutters are the trough that channels water from the eaves to the downspouts. Made from 26ga steel gutters are an accessory and are not mandatory to have installed on you steel building.

## H.

### ***Hair-Pin:***

Reinforcing bar used to help transfer anchor bolt shear (due to column thrust) to concrete floor mass. The "U" shaped hair-pin wraps around the anchor bolts inside the slab.

### ***Haunch:***

Also known as Knee. The deepened portion of a column or rafter, designed to accommodate the high stress where column and rafter intersect and connect. The rigid frame column and rafter come together to form the haunch. The haunch will be the lowest point in the roof of a building.

### ***Header:***

A horizontal member over a wall opening.

### ***Header Trim:***

Trim used above a wall opening.

### ***High Strength Bolts:***

Any bolt made from steel having a tensile strength in excess of 100,000 pounds per square inch (p.s.i.). Some examples are ASTM A-325, A-354, A-449.

### ***High Tensile Steel:***

Structural steel having a yield stress in excess of 36,000 pounds per square inch.

### ***Hip Roof:***

Hip roofs are created when two roof slopes coming from two different directions intersect. The opposite of a hip would be a valley. When two gable roof sections come together at an angle a hip and valley section are created.

### ***Hot-rolled Shapes:***

Steel sections (angles, channels, I-beams, etc.) which are formed by rolling mills while the steel is in a semi-molten state.

## I.

### ***Impact:***

Shock loads caused by dynamic application.

### ***Inner Liner:***

Liner paneling on the inside of walls.

### ***Inside Corner Trim:***

Trim which flashes inside corners.

### ***Insulation:***

Insulation is any material used in building construction to reduce heat transfer. The most common steel building insulation used is vinyl backed fiberglass. Insulation is available in different thicknesses depending on the application and the R-value required.

### ***Intermediate Bay:***

A distance between two main frames within a building, other than end frames.



## **J.**

### ***Jack Beam:***

A jack beam is used to support another column or rafter to eliminate a support column that would normally need to rest on the foundation. Jack beams are often used to create large openings in walls where the opening width is greater than the bay width.

### ***Jack Truss:***

Truss used to support another beam, truss or rafter to eliminate a column support.

### ***Jamb:***

A side column of a doorway or opening.

### ***Jib Crane:***

A cantilevered boom or horizontal beam with hoist and trolley. This lifting machine may pick up loads in all or part of a circle around the column to which it is attached.

### ***Joist:***

Joists are supporting open web beams used in the roof or the floor of a mezzanine. Joists are cost effective at carries large loads or spanning large distances.

## **K.**

### ***KIP:***

Kilo-pound equals 1,000 pounds, ie 3kps equals 3,000 pounds.

### ***Knee (or Haunch):***

Also known as Haunch. The deepened portion of a column or rafter, designed to accommodate the high stress where column and rafter intersect and connect. The rigid frame column and rafter come together to form the knee. The knee will be the lowest point in the roof of a building.

## **L.**

### ***Lean-To:***

A lean to structure has only one slope or pitch, similar to a single slope, but is supported by a column on one side and another structure on the other. Lean-To buildings can be attached to standard steel building or any solid structure with the ability to carry the additional load.

### ***Liner Panel:***

Liner panels are perfect for finishing off the inside of your building. Liner panels are available in 29ga, 26ga, and even 24ga, depending on the application. Our most popular liner panel profile are the Super Span, Low Rib and Accent 11. Liner panels are used on the inside of the walls and roof to easily and economically finish off the interior of your building. These panel are available in over 20 different colors. The base metal is galvalume, which is a zinc-aluminum coating that provides excellent corrosion resistance. These panel comes with a standard 40 year paint warranty.

***Lip:***

A flange stiffener.

***Live Load:***

Any moving or variable load which the structure must support; roof live load is usually snow load.

***Louver vent:***

Louver vents provide very economical ventilation for steel buildings. These vents are mounted to the walls of your building and can be combined with ridge vents or turbo vents. Wall louvers will act as intake vents while the roof vents will act like exhaust vents. Vents can be purchased with fixed or adjustable louvers depending on your application. Vents are available in all sizes and come standard with either bird or insect screens to keep your building pest free. Electric fans can be attached to these vents to provide additional air movement. The vents are available in all Federal Steel Systems colors. The base metal is galvalume, which is a zinc-aluminum coating that provides excellent corrosion resistance.

**M.**

***Mansard:***

A tilted fascia system mounted to the roof, outside the steel line, and above the roof line to form a decorative fascia appearance and hide the roof line.

***Main or Primary Framing:***

Steel frames which support secondary framing members such as girts, purlins or eave struts.

***Masking:***

The plastic covering on metal panels used to protect pieces during transit. Masking must be removed immediately after installation.

***Mastic:***

Caulking or sealant furnished in rolls, normally used in sealing roof panel laps.

***Moment:***

Force times distance (torque).

***Moment Connection:***

A joint capable of transmitting moment to another member of the system.

***Mullions:***

Vertical member connecting two windows located side by side.

***MS-Multi-Span:***

More than one building tied together; multiple gable buildings.

**N.**

***Nibbler:***

An electric hand tool used to cut steel roof or wall sheet openings.

## O.

### ***Oilcanning:***

A wavy appearance in a metal panel that is aggravated by expansion of the metal.

## P.

### ***Panel:***

Steel panels act as the skin of the building. Panels cover the walls and roof areas. Typical steel building panels are 26 and 24 guage, but other guages are available.

### ***Panel Clip:***

Independent clip used to attach roof panels to substructure.

### ***Parapet:***

That portion of the wall which extends vertically above the roof line to form a fascia-type appearance to hide roof slope.

### ***Partition:***

An interior dividing wall.

### ***Peak Panel:***

Rib panel located along building ridge; conforms to roof slope and configuration.

### ***Pier:***

A concrete structure designed to transfer vertical load from the base of a column to a footing.

### ***Pilaster:***

A masonry column built into a wall and projecting

### ***Pitch:***

An inclination or slope measured in degrees, or percent, or by the ratio of rise and run.

### ***Pop Rivet:***

A small headed pin with expandable shank for joining light gage metal. Typically used for flashing trim, etc.

### ***Primer Paint:***

Initial coat of a paint applied at factory to structural framing for protection against elements during erection and shipping only.

### ***Purlin:***

A secondary, cold formed horizontal structural member located in the roof to support sheeting, that is itself supported by the primary structure framing.

### ***Purlin Extension Canopy:***

Cantilevered continuation of roof at rake line.

## R.

### ***Rafter:***

A fabricated primary structural member with parallel flanges that extends from haunch to apex. Any beam used in a primary frame to support purlins.

### ***Rake:***

The intersection of roof and endwall.

***Rake Angle:***

Angle attached to purlins at rake for attachment of end-wall sheets.

***Reactions:***

Reactions are forces required to resist loads from a structure. Federal Steel Systems provides all the reactions needed to design a foundation to properly support the building.

***Reinforcing Steel:***

Steel rods placed in concrete to take tension, compression and shear stresses.

***Rib:***

A raised line in the flat portion of a metal panel that gives added strength and minimizes the appearance of oilcanning.

***Rib Panel:***

Standard panel used on roof, liner and soffits.

***Ridge:***

The highest point on the roof of the building which describes a horizontal line running the length of the building.

***(RF) Rigid Frame:***

A clearspan structure, characterized by tapered columns, tapered haunches and rafter beams.

***Rollform:***

Forming metal shapes by applying pressure through rollers.

***Roofing system:***

Assembly or interacting components designed to weatherproof, and sometimes to insulate, the roof surface of a building.

***Roof Slope or Pitch:***

Slope of a roof plane expressed as a ratio of vertical rise per unit of horizontal run.

**S.**

***Sag Rod or Sag Angle:***

Tie rods or angles to support bottom purlin flanges against compression buckling due to special wind force.

***Sag Strap:***

A metal strap used to align purlins during erection.

***Sealant:***

Any material which is used to close up cracks or joints to protect against leaks.

***Secondary Framing:***

Secondary framing consisting of minor load bearing members of a structure, such as purlins, girts, eave struts, etc. Typical secondary framing is Z shaped and supported by the primary framing.

***Seismic Forces:***

Forces due to earth movement or earthquake.

***Self-Tapping Screw:***

All of our buildings come Standard or Long Life self drilling / self tapping screws for all wall and roof panels. Federal Steel Systems supplies screws with a superior finish. The screw heads are painted to match the panel color, allowing them to blend in. Our screw heads have an encapsulated rubber washer which provides a completely weather tight seal when screwed down.

***Service Door:***

Swinging hinged door.

***Sheet:***

A thin, flat rolled metal product having mill or cut edges.

***Shims:***

A piece of steel used to level or square canopy beams or base plates.

***Shop Drawing:***

Shop drawings are prepared in house by our engineering staff. These drawings are used to fabricate each and every part of a steel building.

***Shop Weld:***

All shop welds refer to the welds done at the fabrication facility.

***Skylight or Translucent Panel:***

Skylights, or translucent panels, and wall lights are the most economical method to adding natural light to your building which will keep your lighting cost down year round. These panels can be installed on the roof or on the walls of your building. Light panels are made of fiberglass and are manufactured to the panel profile so they fit perfectly and provide a weather tight seal. Each panel is 3' wide and come in various lengths to suit your needs. Insulated translucent panels are also available as an option. Insulated translucent panels are manufactured with an air barrier that greatly reduces the temperature transfer from outside to inside the steel building. Ask your Federal Steel Systems representative about these panels.

***Slide Door:***

A single or double leaf door which opens horizontally by means of overhead trolleys.

***Slope:***

The tangent of the angle between the roof surface and the horizontal plane, expressed as a percentage, or in inches of rise per foot of horizontal distance.

***Soffit:***

The soffit panel is the sheeting that is used to cover the underside of an overhang, canopy or mansard. Soffit panels are optional but do offer a nice finished look.

***Specification:***

A precise statement of a set of requirements, to be satisfied by a material, product, system or service. It is desirable that the requirements, together with their limits, should be expressed numerically in appropriate units.

***Standing Seam:***

Seam type that consists of an upturned rib, that may also be structural, with a watertight seam. It is made by turning up the edges of two adjacent metal panels and then folding them over in one of a variety of ways.

***Step Flashing:***

Flashing method used where a vertical surface meets a sloping roof plane.

***Stitch Screw:***

Stitch screws are used to attach adjacent panels to each other at the side lap.

***Structural Steel Members:***

Load carrying members, may be hot rolled sections, cold formed shapes, or built-up shapes.

***Substrate:***

The surface upon which the roofing or waterproofing membrane is placed (structural deck or insulation).

**T.**

***Tolerance:***

The allowable deviation from a value or standard; the total range of variation permitted in maintaining a specified dimension in machining, fabricating or construction of a member or assembly.

***Trim:***

The light gage metal used in the finish of a building, especially around openings and at intersections of surfaces, often referred to as flashing.

***Translucent Panel:***

*See Skylight*

***Turn of Nut Method:***

Turn of the nut method is a tightening specification for structural bolts in a connection. A rotation of the nut from one position to a final snug position will produce at least the desired minimum tension on the bolt. ("Snug" is defined as the point at which the material between the bolt head and nut is rigid. If power tools are used, "snug" would be the point at which the wrench began to impact.)

**U.**

***UH Crane:***

A multi-rail, underhung, material handling system, manually or electrically operated.

***Uniform Load:***

Loads that cover all or part of a beam and throughout the portion covered, the amount of load per unit of length is the same.

***Uplift:***

Wind load on a building which causes a load in the upward direction.

**V.**

***Valley:***

The internal angle formed by the intersection of two sloping roof planes.

***Valley Gutter:***

A channel used to carry off water from the "V" of roofs of multi-gabled buildings.

***Vapor Barrier:***

Material used to retard the flow of vapor or moisture into walls and thus prevent condensation within them.

***Vented:***

Perforated panels used as soffit to allow air circulation for prevention of moisture buildup.

***Ventilation:***

The process of supplying outside fresh air to, or removing air from an enclosure.

***Ventilator:***

An accessory usually used on the roof that allows air to pass through.

**W.**

***Wall Covering:***

The exterior wall skin consisting of panels or sheets and their attachments, trim fascia and weather sealants.

***Wash Coat:***

A coating applied to the back or unexposed side of the strip. Its purpose is to protect the top coat during transit and prevent corrosion of the reverse side. It also provides lubrication for roll forming. It is not closely controlled for color, gloss or applied dry film thickness. Not to be confused with back coat.

***Web:***

That portion of a structural member between the flanges.

***Weep Holes:***

Openings in flashings, etc., to permit drainage and reduce pressures. (Usually field drilled holes)

***Wind Load:***

A loading representing the pressure exerted on a structure by a given wind velocity. A load caused by the wind blowing from any horizontal direction.

***Work Point:***

An intersection of planes from which dimensions are located.

**X.**

***X-Bracing:***

X-Bracing is used in buildings to provide additional bracing and strength. This can be done with steel cables, rods or even angle in severe cases.

**Y.**

**Yield Stress:**

The stress at which the strain ceases to be directly proportional to the stress. The stress by which steel is identified such as A-36 indicated 36,000 psi yield.

**Z.**

***"Z" Section:***

A member of cold-formed from steel sheet in the shape of a block "Z".

**For assistance e-mail us at [info@federalsteelsystems.com](mailto:info@federalsteelsystems.com) or call  
855-885-9570**

