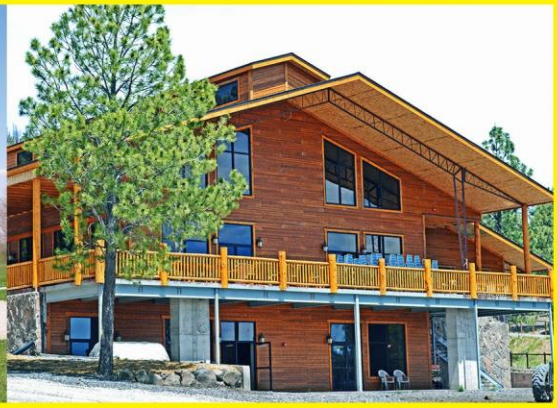
STEEL BUILDING INFO GUIDE



WORLDWIDE STEEL BULDINGS SINCE 1983

Toll Free 1-800-825-0316

USES FOR STEEL BUILDINGS

Steel buildings are commonly called pre-fabricated or pre-engineered steel buildings. The strength & versatility of steel makes them the number one choice for most applications **including garages, shops, agricultural storage, churches, aircraft hangars, homes, recreational centers, arenas, commercial and industrial projects**. The current steel building offering is nothing like the past. With the right package, you can make the exterior look like any wood-built structure you have seen and maintain the benefits of steel.

WHY A STEEL BUILDING

Many buildings in the market appear to be steel buildings from the outside, when in fact they are wood structures wrapped in sheet metal.

The design and use of all steel buildings first gained popularity in the early 20th century. **Steel rapidly became the material of choice for many structures due to the strength and cost efficiency.** Software was developed for designing steel trusses and building packages. This software expanded the use and capabilities of steel buildings and allowed them to be easily designed for different snow and wind loads with clear spans up to 300'.

Erection time and cost is greatly reduced over conventional construction and is cut to days and weeks instead of weeks and months. **Much of the assembly cost in conventional construction is taken out by the design and pre-fabrication done in the plant. This can reduce the overall construction cost by as much as 50-60%.** Make sure that you have a live truss, not post and beam in the end walls of your building if you ever plan to extend your building to make it longer.
The live truss allows you to remove only the sheet metal and secondary framing from the end wall and add length as needed and still maintain the structural integrity.

With steel you get about 25 times the weight to strength ratio over wood. You no longer have to worry about fire, termites, bore bees, wood rot, shrinking, warping or cracking. Steel doesn't emit volatile organic compounds or breed mold. Maintenance is minimal and the strength of steel against Mother Nature is unmatched. **These features also can reduce your insurance cost by as much as 30-40%.**

Because of the characteristics of steel, you can have a structural warranty as long as 50 years with some steel building manufacturers. (NOTE: remember that solid warranties come from the producer of a product not brokers.)

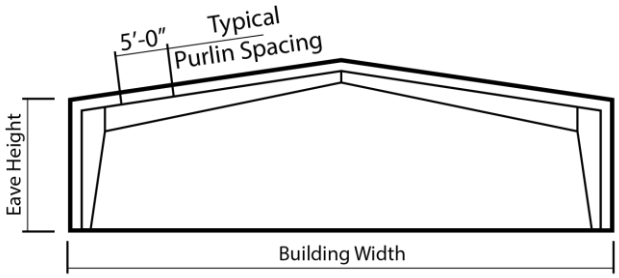
Steel buildings are environmentally friendly with many companies using only recycled steel. This allows you to go green without giving up appearance or convenience. A 2,000 square foot building requires approximately 40-50 trees to build versus the same size steel building which requires about six scrapped automobiles.

If preferred, exterior appearances are easily changed using stone, brick, stucco or other common materials.

With low initial cost and almost no maintenance cost, steel buildings are the number one choice in the market.

TYPES OF STEEL BUILDINGS (STRAIGHT WALL AND ARCHED)

Rigid Frame: Also called I-beam or red iron buildings, this type of building is most commonly used for



commercial and industrial applications. Rigid frames can be set on piers or footing with a concrete slab being optional. Trusses are normally on 25-30' centers. Erecting a rigid frame requires heavy equipment because each truss is bolted together on the ground and then lifted and set in place.

The secondary framing members are made of large C's or Z's and spaced every 5-7'. Stitch screws are supplied to connect the sheet metal together where no secondary framing is available. **Rigid frames can be designed for all wind and snow loads, but with a shallow roof pitch, zoning may be a problem unless it is located on industrial land.** Rigid frames go up fast and are available in a wide band of colors. Rigid frames are available for clear spans up to 300' and normally will have a roof pitch between 5:12 through 2:12.

Ideal for large commercial projects or sporting arenas, they can be very cost effective on large non- insulated buildings, but if not insulated at time of erecting the building may sweat causing interior condensations and dripping. Depending on the manufacturer, some field welding and drilling may be required. Many rigid frames are sold through brokers and some rigid frame systems are not designed for the do-it-yourselfer, even though they are presented that way.

Open Web Truss: Created in the 1950s, the open web type system is commonly seen as bar joist in large retail stores due to their strength. When used as trusses in steel building packages, they give you a much easier building to erect. Open web truss standards roof pitch is 4:12 and 3:12 but can be designed from 5:12 through 12:12 pitch without losing the integrity of the truss. **The steeper roof pitch also makes the building fit into residential areas more naturally.**

Although the overall weight of steel in an open web truss building package is usually heavier than other steel building packages, having the secondary framing on two-foot centers and bay spacing of the trusses much closer than a rigid frame creates **unmatched strength against heavy snow and winds.** With the steeper roof pitch, second floors are available for storage or living space, but can also allow you the height for automobile lifts or hoists.

Open web truss is an excellent choice if you plan any interior finish. Most open web truss designs have standard deflections stiffer than most other styles of steel buildings on the market. A variety of exterior finishing materials, instead of sheet metal can be used. Windows and walk doors can be field located for just the right location. Open web trusses allow for strength without the individual excessive truss weights of other steel buildings on wide bay spacing. **One limiting factor for the use of open web truss is the maximum 100' width clear span.** Half trusses and self-supporting overhangs can be added to the 100' width to give you more space if required.

Quonset Hut: Also called arch buildings, Quonset huts are a rounded or curved shape. **Best known for use as military barracks 50 years ago, now the most common use is livestock shelter and agricultural hay storage.**

Most are sold without any type of end wall and if you want it closed in you will need to build your own end wall out of wood. Although normally priced below other steel buildings, the downfalls are many:

- less usable space than a straight wall building
- impossible to put doors or windows in side walls
- very expensive to insulate efficiently
- no factory color options
- difficult to do interior finish
- zoning restrictions
- meeting snow and wind load requirements
- building limits, the actual use with a normal maximum width of 60'

There is a wide variation in arch buildings based on type of steel, thickness, tensile strength, and coatings and they are usually the cheapest of all steel structures.

Hybrid: Hybrid buildings have taken the strength of the steel open web truss and matched it with common lumber used for secondary framing. This combination is creating a versatility that is unique and has cost saving advantages. Using wood secondary framing eliminates the condensation problem, creating a natural thermal break and still maintaining the benefits of the open web trusses. Some people like the wood for ease of interior finish. These buildings insulate effectively and inexpensively, and can be insulated at time of erection or in the future. **The Hybrid is a great alternative to a pole building** with wood trusses and a rigid frame with heavy steel frames spaced 25' apart with secondary framing of 5-7 foot centers. **Limitation is the maximum clear span of 100'.**

Tube Frame: Tube frame buildings are mainly used for carports and RV covers, but you will also see the tube style frame used in fabric buildings. **Made of lightweight galvanized steel or aluminum, these packages can be a great alternative for budget- conscious users needing a shed or carport.** Some common applications for fabric buildings are grain storage and riding arenas. Some limitations are **they don't have the same strength as other steel buildings and shorter warranties.**

Light Gage Frame: The main use for light gage frame buildings is mini storage or light utility storage. These buildings normally consist of all secondary framing members that are screwed together to create walls and or a truss system. Many can be set on only a slab foundation. Depending on the application, some packages come with pre-assembled walls and can go up fast. The limitations are clear span widths and options available.

MAINTENANCE FOR STEEL BUILDINGS

A very important advantage of a steel building is the lack of required maintenance. It is fair to say that a steel building is a maintenance-free building. Unlike a wood framed building, steel does not rot, warp, or split. Steel is not vulnerable to insect attacks from termites, bore bees, or carpenter ants. Steel buildings do not require painting for 25-40 years. Structural warranties range from 1-50 years and should always be checked when considering a steel building.

ENVIRONMENTAL CONCERNS OF STEEL BUILDINGS

Steel and metal buildings are green and many manufacturers use only recycled steel. The inside of a steel building offers a superior indoor environment with no organic compounds that can emit noxious fumes, leading to better air quality. **Steel is the most recycled material on the planet, so when you choose an all-steel building, you are helping to protect the environment for generations to come.**

INSULATING A STEEL BUILDING

Insulating an all-steel building also creates the vapor barrier and thermal break required to avoid condensation and drips. There are several ways to insulate a steel building that will give you a wide range of "R" values. The R-value is a measure of thermal resistance used in the building and construction industry. The R-value is a measure of insulation's heat loss retardation under specified test conditions. **When insulating a steel building, traditional fiberglass blanket with a white vinyl back is the most popular method.** This product is placed between the sheet metal and the secondary framing, giving you both the thermal break and vapor barrier. **Other insulation options include rigid board, reflective, and spray foam.** Each type of insulation has different characteristics and performs differently in various regions. Along with insulation, some owners are using radiant heat which is a hot water system put into the concrete.

PLANNING GUIDE

There is much to consider when planning a new building project. Budgets, time frame, aesthetics, design, functionality, warranties, purchasing the building… these are just some factors that determine how your vision will become a reality.

Budget:

Permit cost
Dirt work cost
Concrete cost
Pre-engineered steel building package cost
Insulation cost
Cost of erecting
Taxes

Cost example:

Base building range - $9-$17 a square foot
Foundation range - $4-$9 a square foot
Erecting the building range - $3-$10 a square foot
Accessories range – 0%-30% of base building

Time frame:

The key here is knowing when you want to be using your building. If working with a reputable steel building company, the process of ordering a building, the company designing the building, fabricating the building and delivering to your building site can take up to 6-8 weeks. **If you want to be using your building in 3-4 months, you should start the order process now.** Steel pricing can fluctuate, but if you are dealing with a reputable company, you will have price protection to take delivery of your building package in a reasonable amount of time.

Aesthetics:

The most economical building packages will be a complete package, including sheet metal siding. **Roof pitch can have a big impact on aesthetics.** A steeper roof pitch with a colored roof is much more appealing than a flatter galvalume roof. **To dress up sheet metal siding, you can add wainscot to one or more walls.** Wainscot is a panel usually approximately 3'7" tall located at the base of the building. Wainscot color would normally match the trim color and can greatly change the aesthetics of the building. There are numerous options that can be used with steel buildings that include using stucco, brick and stone. All options can be used on one or all walls.

Design:

First you should check with your local building codes department to **get the correct snow and wind load requirements** for your area. Once you have the load requirements, make sure the building in designed to meet those loads. You are then ready to **decide what style of building best fits your needs.** Do you plan to build it yourself? If so, not all buildings are designed for the do-it-yourselfer even though many salespeople will tell you they are.

Functionality:

What overall width of building do you need?

What overall length of building do you need?

Would you ever want to make the building longer?

How does the size position on the space set up for the building?

What overhead door size and number do you want and where do they work best?

What walk doors do you want and where do they work best?

What windows do you want and where do they work best?

Do you want the building insulated?

Do you plan to heat the building? Part time or full time?

What roof pitch do you want?

How do you want to position your building and doors considering prevailing wind direction and sun location at different times of the day?

Do you want a second floor for storage space of living space?

Warranties:

You always want to make sure that the steel building you are purchasing has a structural warranty and a sheet metal warranty. The structural warranties can range from 1 year to 50 years and the sheet metal warranty can range from 10 years to 40 years. You should receive a copy of these warranties once you have purchased a new steel building.

Purchasing the Building:

When considering purchasing a steel building you should always consider buying from a company that actually manufactures their own product.

Many brokers will represent themselves as manufacturers, when actually they just buy from the lowest priced manufacturer they can find. There are many steel building brokers in the market that use high pressure salespeople and will tell you that they have one canceled building that you have to buy now and it's just what you wanted. They will represent themselves as the shipping clerk, the production manager, etc. when, in fact, that is just a trick they use to make you feel like you'd better not pass up the deal. Be cautious of this tactic. There are very few people who make a down payment on a building and then don't take their building. If a company always has a canceled building, the question should be why do they always have canceled buildings? Most companies will be able to give you a delivery time upon placing your order. **You should always make sure that you are going to get a complete package that includes framing, sheet metal, trim, closures, framed opening materials and all the fasteners.** If you are purchasing doors from the company, ask what type of door they will be supplying.

If the first question you ask a salesperson is, "How much?", you may buy something you won't be happy with. There are many styles and options. Only when you ask questions will you find out what would work best for your project.

The cheapest purchase price may not be the cheapest overall cost. Remember what John Ruskin once said, "Good things are seldom cheap, and cheap things are seldom good".

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