



# Steel Buildings 101:

## A guide to your steel building project

# History of Arch-Style Steel Buildings

Corrugated arch steel buildings are based off of the design of the Quonset Hut that was used by the military in the 1940s. Quonset Huts are prefabricated structures made from corrugated galvanized steel that have a semicircular design. Their name comes from the site where they were first manufactured, Quonset Point in Rhode Island.

In 1941, the United States Navy decided that they needed an all-purpose, lightweight building that could be shipped anywhere in the world and assembled quickly and easily to support the troops in WWII. The Quonset design was modeled closely on the World War I Nissen Hut engineered by the British. The Navy found that they were able to maximize the flexible interior space of these structures since the building was an open clear-span design. In addition, they discovered that the rounded shape of the corrugated arch is one of the strongest structures in architecture which provided the shelter they needed during the war.



After the war ended, Quonset Huts were too good of a resource to throw away. So the military sold them to civilians for about a thousand dollars each.

Many of the original Quonset Huts still stand throughout the United States. However in the 1970s, the design started to evolve into an even stronger prefabricated structure.

Today's arch steel buildings have been engineered and designed to be a stronger version of the historic structure. The Quonset Hut has evolved into a new type of building that combines the architectural strength of the arch along with 20th century technology which allows the buildings to be engineered to handle all types of climates and conditions.



# Advantages of Arch-Style Steel Buildings

## Easy Do-it-Yourself Construction

- 70% of the work is done on the ground with only one-size nut and bolt.
- In most cases, no heavy equipment is required when raising your steel building.
- Over 80% of customers construct their own building resulting in huge labor cost savings.



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## Strength and Durability

- Steel buildings are designed and engineered to meet the wind and snow loads of their locations.
- Ability to withstand extreme weather conditions including high winds, severe snow storms, hurricanes and earthquakes.
- Steel is not susceptible to termites, cracks, splitting, rotting and fire.
- Most manufacturers offer a 30 year warranty.



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## No Maintenance

- Minimal maintenance on your steel building due to Galvalume (oil-based) or [Galvalume Plus](#) (clear, organic resin) coating.
- Does not require painting or treating.
- Building surface is easy to clean with soap and water.
- Resilient quality of steel provides rugged strength that can withstand bumps and bangs common to a working building.



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## “Green” Features

- Steel is a 100% recyclable material.
- Buildings with an Energy Star rated Galvalume Plus coating are more energy efficient and keep the building cool in the summer and warm in the winter.
- Ability to utilize natural resources with skylights, solar panels and rainwater collection systems.
- Steel buildings have a long life cycle.



# Steel Building Project Overview

## Making your Purchase

Purchasing a steel building is slightly more complex than some people may think it is. However, if you work with the right company, you will be walked through the process step-by-step and receive all the help that you need. To give you a head start on the process, here are few pointers:

1. Before you contact a steel building company, have an idea of the following:
  - Building location
  - Basic building size and height
  - Building use/function
2. Check with your local building department regarding codes and regulations for your building location.
3. See what building models are available and have a design in mind. This includes:
  - Endwall configuration
    - Open-ended, one endwall, enclosed
    - Steel endwalls or custom built
  - Accessories needed
    - Skylights, vents, windows, insulation, doors, etc.

Once you have discussed the above with a building supplier and are ready to make your purchase, it is time to put down a deposit on your steel building. After the deposit has been placed, most building companies will send you blueprints for your structure. The remainder of your payment will be due at delivery.

## Preparing for Construction

Now that your building has been ordered, it is time to make sure everything is ready for construction. The site that you choose for your steel building should have access to the following:

- Natural drainage
- Firm and level ground
- Easy access
- Access to utilities (optional)
- Room for future expansion (optional)

Once you have the perfect location for your steel building, you are ready to start on the foundation. The first step is to make sure your building site is level. After you have leveled the ground, you are ready to set the forms for your concrete. Forms are used to hold the concrete together while it dries and to dictate its shape. Once your forms are ready, pour the concrete following all of the steps provided by the manufacturer.



# Steel Building Project Overview

## Arch-Style Steel Building Construction

Arch-style steel buildings are easy to construct and are commonly done as a DIY project. You will receive a construction manual at delivery, but the basics are below.

**Step 1: Build Arch on the Ground**



**Step 2: Lift Arch & Guide with Rope**



**Step 3: Bring Arch to Vertical Position**



**Step 4: Set Arch in Place/Secure to Foundation\***



**Step 5: Raise Remaining Arches**



**Step 6: Complete Building**



*\*Keyway foundation is standard on all buildings. Industrial Base foundation option is for illustration purposes only.*

# Arch-Style Steel Building Models

Arch steel buildings are available in six models that all feature 100% clear-span space on the interior of the building. While you will most likely get to choose the model of your building, the intended use of your building or its location's load requirements may determine the best model for you.

## A-Model



The A-Model is perfect for any garage, backyard shop or storage building. With the 4:12 pitched roof line and high sidewall clearance, you are able to customize the building to fit any decor.

## S-Model



The S-Model is great for a variety of applications including storage sheds, warehouses and equipment covers. Straight sidewalls allow for use of the perimeter of the building.

## Q-Model



The Q-Model is fashioned after the buildings first used by the military in the early 20th Century. The shape offers extended widths, superior strength and durability.

## X-Model



The X-Model works well in locations with high snow load requirements. It offers the strength needed for heavy snow while still providing 100% usable space on the interior.

## R-Model



The R-Model is a roofing system that utilizes arch technology to provide shelter without any bulky beams, trusses or supports. Ideal for carports, patio covers and equipment storage.

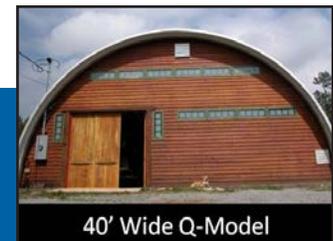
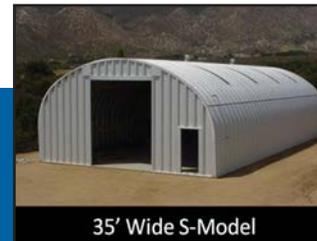
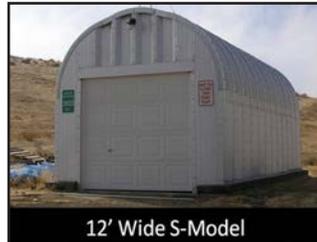
## T-Model



The T-Model combines the strength of a traditional building with the innovative technology of the roofing system. It is commonly used on farms and in custom roofing applications.

# Arch-Style Steel Building Sizes

The width of your arch steel building will depend on several factors including the model and location. Steel building length is virtually unlimited and is available in two foot increments. There are standard heights for every building model and width, but buildings can be custom-designed to be taller.



# Steel Building Uses

## Garages and Workshops

- Organize, store and protect your cars, tools and other valuable possessions.
- Provides security and durability against fire, snow and hurricane-force winds.
- 100% usable space allows flexibility within building to setup tools and equipment for a workshop
- Easily hang lighting, run conduit, build shelving or add insulation.



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## Agricultural Storage

- One of the most popular uses of steel buildings.
- Clear-span design eliminates beams and trusses allowing storage of large equipment.
- With widths of up to 150 feet and lengths as long as needed, a steel building can be used for all your storage needs from hay to tractors.
- Designed for easy construction and hassle-free maintenance for the life of the building.



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## Government / Military

- GSA Contract # GS-07F-0458T
- Able to quickly assemble, disassemble, relocate and then reassemble as needed.
- Can be used for barracks, equipment storage, training facilities or portable storage.
- Can be delivered quickly to meet contingency requirements.



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## Commercial / Industrial

- From small equipment covers to large warehouses, steel buildings can meet any commercial need.
- Able to customize with doors and/or windows on any side of the building.
- Easy do-it-yourself construction can save on costs.
- Pre-fabricated buildings can be installed quickly so that other processes are not interrupted.



# Steel Building Uses

## Housing

- Versatile and easy to customize, yet provide strength and durability needed for a home.
- Economical choice for home construction.
- Clear-span design allows for open floor plan without beams and trusses.
- Considered a “green” design since steel is 100% recyclable.



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## Animal Shelters

- Provides a place for animals to seek shelter, rest or feed.
- Ability to have building open on both ends, one end or closed (if access needs to be limited).
- Easy to clean up any mess created by the animals.
- Steel walls will resist breakage when kicked by animals.



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## Aircraft Hangars

- Can be built to accommodate any size plane from a single engine to large commercial jets.
- Use as a permanent structure on a tarmac or as a portable hangar on a grass landing strip.
- With no need for interior supports, interior space can be maximized for maintenance of aircraft as well.



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## RV Storage

- High rooflines and sidewalls create large storage space for RVs.
- Offers weather protection from sun, rain, sleet, snow and high winds.
- Easy do-it-yourself construction makes a steel building an economical choice to protect your investment.
- Able to customize endwalls to match the look of your home or surrounding buildings.

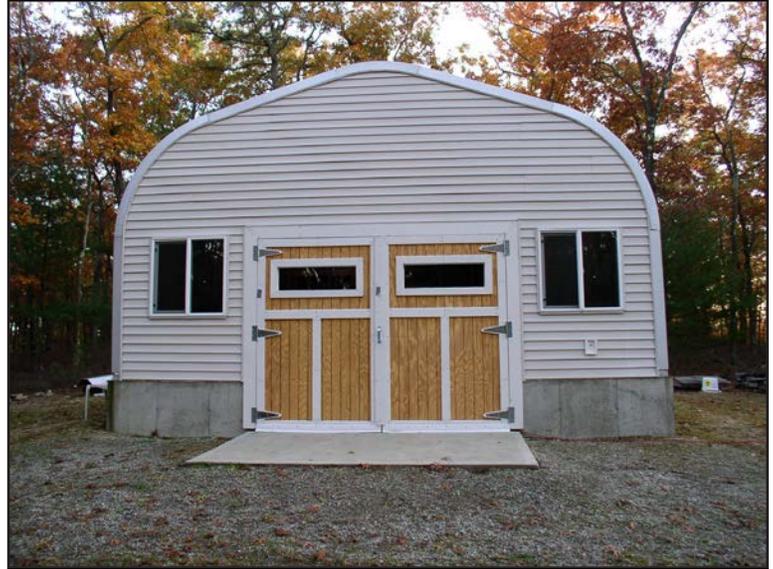


# Steel Building Endwall Options

When you purchase a steel building, you are purchasing the shell of the building only (unless it has been otherwise stated). You can choose to have your building open-ended, with one endwall or enclosed with two endwalls.

Once you have decided which configuration works best for your building application, you need to decide if you want to use steel endwalls or build your own custom design.

Steel endwalls are a great economical choice and can be delivered with any overhead door frames already pre-cut.



However with custom endwalls, you have the ability to make your steel building match your home or any other surrounding buildings. Since endwalls are non-load bearing, your custom design will only enhance the appearance of the building.

## Open -

- Can be open on one end or both ends.
- Commonly used for hay storage and animal run-ins.



## Steel -

- Endwalls made from steel
- Able to add openings for doors and/or windows.



## Custom -

- Endwalls are built by the end user.
- Common building materials include vinyl siding, brick and wood.



# Steel Building Accessories

Some of the most common accessories include doors, insulation, skylights and vents, but there are many more that you can use to customize your building.

## Doors

- There are a variety of doors that can be added to a steel building including service doors, garage doors and canister doors.
- Garage door location depends on the internal clearance required from the door manufacturer.
- Doors can be placed on endwalls or sidewalls.



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## Insulation

- Insulation is used to control environmental conditions based on building application and possible condensation issues.
- Blanket-style insulation easily retrofits after a building has been constructed.
- Available in R-Values of 10, 13, 19 and 25.
- Standard roll widths are 48", 60" and 72".



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## Skylights

- Economical way to illuminate your building.
- Skylight panels are corrugated to the same contour of the steel panels that they easily replace in the roof.
- The flat-bottom V-shaped corrugation allows light to enter at three angles dispersing it within the building.
- May also be available in a variety of colors.



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## Vents

- Louver and turbine vents and adapters eliminate condensation and maximize air circulation.
- Significantly reduces the heat from within your building at a minimal cost to you.
- Does not require electricity; uses wind velocity to function.



Other steel building parts and accessory options include:

- Base Connectors
- Trim Kits
- Additional Arches
- Shelving Systems
- Window Frames
- Bolts