



# Straight Wall Building Erection Process

1.



Pour concrete slab.

2.



Stand main frame columns

3.



Attach wall girts and mainframes

4.



Attach the purlins to the main frames

5.



Once all purlins are in place, apply sheeting

6.



You are finished assembling your straight wall building



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## **Estimating Steel Building Installation**

This basic outline is designed to assist Builders who may not have vast amounts of experience, in estimating steel building erection, or knowing if a sub-contractors bid for erecting a steel building is reasonable. As with all types of construction, setting up or installing a pre-engineered steel building, comes down to time, material, equipment and overhead. Just like an automobile, the brand of the structure will greatly impact the quality and will vary drastically. The quality of the materials will have a great impact on the length of time and labor cost to construct. Make sure that you have educated yourself to the quality of the brand of steel building prior to purchasing or contracting a builder to erect it. (**Compare quality**) The Builder or manufacture's customer service department's ability to get answers, replace components lost, stolen or damaged during construction will be very critical to minimize your construction schedule and final cost. It is suggested, prior to purchasing or contracting an erector that you investigate the customer service offered by the provider, as well as contacting and speaking with a knowledgeable factory representative. Just ask any Erector who has sit on the jobsite, hoping for a return call. This lack of relationship with a reputable steel building manufacture and the resulting lack of customer service are one of the most expensive delays in construction and waste of time and labor dollars.

**The following guidelines are based on some national average assumptions and are for estimating purposes only. They are not intended to provide a detailed or accurate cost for a specific building. As is commonly known in the industry, there is really no such thing as average!**

The following items give you just a few of the variables in each specific geographical area that will need to be considered when estimating the erecting of a steel building.

1. **Weather Conditions** - wind, cold, heat and snow can all have an impact and/or delay the work schedule.
2. **Labor** – an available pool of labor personnel as well as the hourly wage of experienced labor will impact cost.
3. **Equipment Required** – Size and cost per day/week or month of Local Equipment Rental, Lease or Purchase.
4. **Site Conditions** - Working in a large level area will be much faster that working on the side or top of the mountain!
5. **Insurance Cost** – Be sure to request copies and make sure that each Builder or erector carries the appropriate insurance. Many “gypsy” erectors do not carry insurance at all and pay cash to their labor to avoid workmen's compensation, general and other liability insurances.
6. **Complexity of Structure** - a simple box building will be much faster than a complex building with 2-story mezzanines, mansards, roof hips or valleys, exterior stucco or other types of aesthetic added value products.
7. **Clear Span Width of Building** - clear span buildings over 60-80' wide can take more time due to the safety requirements and equipment needed to handle longer and heavier beams.
8. **Travel Time to Jobsite** - obviously the amount of time to get to the site each day or travel cost if applicable, will influence the final cost.
9. **Accessories** – additional items such as insulation in the roof and walls, the type of insulation system, Standing Seam roofs, walk doors, windows, overhead doors, canopies etc. will be items that need to have the additional hours to install added to your cost. (link to accessories)

In order to start to estimate the time and equipment, first you will need to estimate the man hours required to determine the man-hours per square foot of building.

- Based on national averages of an experienced 4 man crew, the average time to erect a small 40 x 50 x 14, (2000') is 4-5 days. To estimate the man hours based on a 5 day average:
- Calculate: 4 men at 8 hours per day = 32 man-hours per day.
- 32 (mhrs) per day x 5 days = 160 (mhrs') per week.
- Divide 2000 sq.ft. by 160 = **.08 (mhrs' per square foot)**
- (National Average is .05-.10 total man hours per square foot)
- (Gypsy erectors often can do a box 2400' building in as little as 4 days or .04 (mhrs') per sq.ft.)

Once you have estimated the man-hours per square foot, you can estimate the labor cost by taking the total man hours times the hourly wage per person.

Next, you would take the total number of days that you would need equipment rental and calculate the equipment rental cost and transportation.

Now, add your appropriate overhead for your monthly business expense. (Typically 10- 35% depending on size of project.)

Larger buildings will usually be closer to the .05 mhrs'. It doesn't take much longer to bolt together 2 beams 40 ft. long that make an 80 ft. wide building, than it does 2 beams 15 ft. long that make up a 30 ft. wide building. However, don't forget to add travel time, insurance cost, accessories, or any of the other above mentioned or job specific items.

#### **Example: Basic 40 x 50 x 14**

2000 x .08 = 160 total man-hours x \$25.00 per hour average	\$4,000.00 Labor
160 total (mhrs) divided by 32 (mhrs) day = 5 days rental at \$500/day	\$2,500.00 Rental
Travel time and expense at \$100/day (100 miles)	<u>\$500.00 Travel</u>
Subtotal	\$7,000.00
Add profit at 20%	<u>\$1,400.00</u>
<b>Total Erection cost (\$4.20')</b>	<b>\$8,400.00</b>

#### **Example: 100 x 100 x 18**

10,000 x .06 = 600 total man hours x \$25.00 per hour average	\$15,000.00 Labor
600 total (mhrs) divided by 32(mhrs) day = 18.75 days rental at \$500/day	\$9,500.00 Rental
Travel time and expense (within 1 hour of jobsite)	<u>No Charge</u>
Sub-total	\$24,500.00
Add overhead at 20%	<u>\$4,900.00</u>
<b>Total Erection Cost (2.94')</b>	<b>\$29,400.00</b>

Erecting steel buildings can be very dangerous. Be sure to be aware of and follow all safety procedures required by law, OSHA, and all other applicable safety standards. If you are not experienced, it is highly recommended that you use a professional and properly insured erector who has the knowledge and experience with the specific brand of building to meet your requirements. Preferably the erector has installed at least 2-3 buildings of the same brand. A good backyard Volkswagen mechanic does not always make a great Cadillac mechanic. These examples are given only as guidelines to assist a Builder in a method estimating the cost of labor & equipment. There are many other methods for estimating erecting cost and nothing is a substitute for experience.