

To Save Money and Floor Space, Consider Cranes Before You Build

Situation: A company needed 45,000 square feet of manufacturing space to accommodate overhead cranes to handle material. A building was to be constructed with 36 interior columns and three bays, each bay containing one crane.

Crane Requirements:

Crane 1: 5-ton capacity, 65'-0" bridge span

Crane 2: 3-ton capacity, 60'-0" bridge span

Crane 3: 16-ton capacity consisting of (2) 8-ton dual girder bridges,
65'-0" bridge span

Objectives: Minimize cost of building and conserve as much floor space as possible.

Options:

1. Use a standard steel building design and later adjust for the cranes.
 2. Customize a steel building and plan to accommodate the cranes.
- (The cost for the *basic* steel building would be the same in either option.)

Cost and Specification Comparison:

Option 1 – use a standard design and later take steps to accommodate the cranes.

Each crane requires support by its own freestanding structure. The specifications for a support steel structure using square tube columns and cap channel headers for the smallest (3-ton capacity) crane are as follows:

- Column 10"x10"X1/2" wall with a 24" square base plate.
- MC18 full header that spans the entire system
- Supports by themselves take up 128 square feet of floor space.
- Foundation requires 5'-0" square by 6" deep in an area free of expansion joints and cracks.

The total cost for providing the support steel structure for this smallest crane is approximately \$75,000. A conservative estimate would be \$75,000 more for each of the two larger cranes and 128 square feet of floor space to accommodate each crane.

Total additional cost for Option 1: \$225,000.

Floor space lost: 384 square feet.

Option 2 – customize the steel building
and plan to accommodate the cranes

The crane load requirements are built into the design of the building and the crane support centers are constructed to building requirements. This includes larger columns and major roof beams than the standard design.

Cost to upgrade each of the 36 interior columns: \$1,000 to \$1,200.

Total additional cost for Option 2: \$36,000 to \$43,200

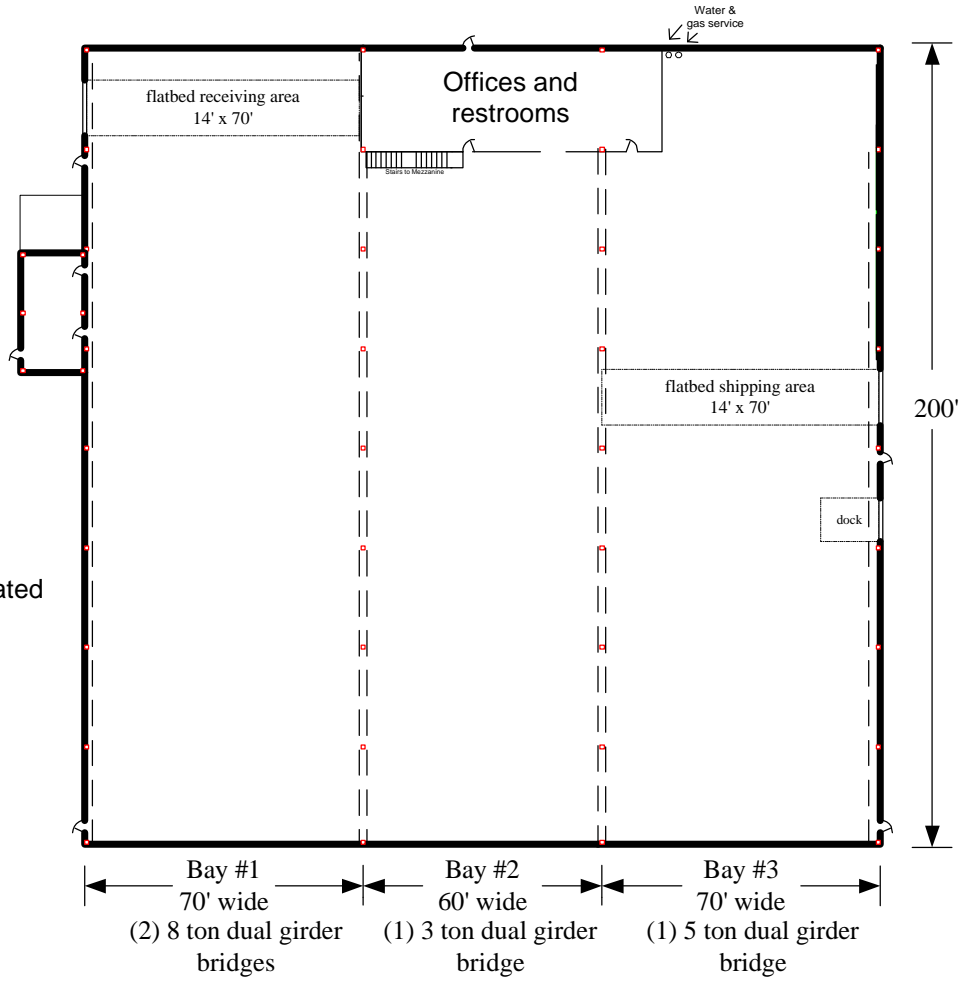
Summary:

The manufacturer had the building designed around the required cranes. Doing so resulted in **savings of well above \$100,000 and hundreds of square feet of floor space.** The cranes were installed at the time the building was constructed, and they are in daily use.

Note:

This comparison is very conservative. It is likely the two larger cranes would require much larger support assemblies. The base plates and gussets of the support structures would be larger, increasing the amount of square footage lost. In fact, the support structures could easily require foundations that would add \$1,000 to \$5,000 per support column.

OEM Manufacturing Facility
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Notes:

25' column spacing
runway locations indicated
by -----