

# “Industrial Structures Cost Model”

The “Industrial Structures Cost Model” contains cost estimating relations (CERs) developed for estimating industrial structures composed of the following structural elements:

1. Plate material
2. Stiffener material
3. Pipe material
4. Miscellaneous

The model provides for the total structure to be developed in modules, each of which may be composed of one or more of the above elements.

For each of the module elements, the model provides cost estimating relationships for computing cutting, welding, clean and blasting and for coating. Options are provided for selecting different types of these process operations. The material specifications for these elements also may be specifically selected (for example, mild steels, high strength steels and aluminum selections; epoxy and anti-fouling type coatings).

The cost model is an Excel workbook. Besides a summary worksheet, there are worksheets for estimating different major structural modules, or components. Each of these component worksheets provides a means for estimating the following:

1. Material costs
2. Labor hours to cut
3. Labor hours to weld
4. Labor hours & material costs to blast, clean and paint.
5. Component total structural weight

User input includes the following parameters for the cost model:

1. Labor rate
2. Profit margin
3. Assumed percent welding efficiency
4. Assumed percent material wastage (separate entries for structural material and for coatings)

The cost model also provides for details of non-recurring design, engineering and production planning, jigs and fixtures, project management, material handling, product preparation, production material delivery freight, quality assurance and other cost elements.

For irregular plate elements, the user may define plate thickness, total plate cutting length, total length and type welding (fillet or V-groove butt weld). Plate material removed from a plate section can be accounted for by negating the removed material weight, while the material cost can be left remaining with the total plate section.

The cost model accommodates standard stiffeners with standard weight and dimensional characteristics. For non-standard stiffeners, these structural elements can be developed from plate, cut and welded to required specifications.

Cost estimates for pipe elements can be developed for standard pipe sections, or from fabricated rolled pipe. A separate CER is available for rolling spherical section elements as well.

The model estimates in terms of a user-defined base year dollars. Material costs are escalated to this base year via separate commodity (steel, versus aluminum versus paint) escalation tables.

