



STEEL INDUSTRY
GUIDANCE NOTES

Factors Influencing Steelwork Prices

There are a wide range of factors that influence tender prices for structural steelwork. In general the factors are either “commercial” or “technical”. Best practice guidance is given below on the key factors, together with information on “lead times” and erection times.

History of Parties Involved

As with any specialist work, the degree of risk is significantly dependent upon the trust that each of the parties has in the others. When the parties (client, engineer, main/management contractor and steelwork contractor) have successfully worked together in the past, a lower price for the work, with fewer post-contract claims, can be expected.

Expertise of the Engineer

Some consulting engineers are more used to designing steel construction projects than others, with resulting simplicity and economy in their designs that will reduce total costs.

Early Selection

Best practice is the early selection and appointment of the steelwork contractor. In order to fully obtain the experience and expertise of the steelwork contractor and the benefits of value engineering, the steelwork contractor should be engaged at the earliest possible opportunity.

Contract Conditions

Comparatively aggressive terms and conditions will result in higher prices from specialist contractors such as steelwork, which requires significant investment in materials and fabrication processes before any completed work arrives on site. Making interim payments for work and materials in the process of being fabricated but not yet delivered or erected, will often lower the overall steelwork costs and improve contingency planning. Similarly, the system of deduction of cash retentions is inefficient and outdated and has no place in the modern construction industry.

Complete “Frame Package”

Many steelwork contractors are able to undertake additional work packages, for example concrete work, fire protection, decking and cladding. Also the larger the project the greater the scope is for economies of scale, for example a special production line can be set up for repetitive components.

Site Organization

Good site co-ordination will facilitate a smooth running project. “Closed” sites in central city locations, as well as remote sites, necessitate premiums due to transport and logistics.

To ensure that a site works effectively it is important to ensure that

- there is adequate access for steel transportation, unloading and erection, both on the site as well as on surrounding or adjacent access roads.
- there is sufficient well-prepared level ground that is adequate to take the requisite wheel loads
- everyone is aware of the need to comply with the BCSCA Safe Site Handover Certificate and maintain its provisions.

Specification

Conformance with the National Structural Steelwork Specification for Building Construction (NSSS) will reduce uncertainty; more demanding tolerances or testing than that specified in the NSSS will increase costs.

Bay Size

Structural steelwork prices are influenced by the size of each individual piece (ie number of pieces per tonne),

which is largely dependent on bay size. For instance the designer might consider larger bay sizes, where the extra weight due to longer spans may be totally offset by the reduced price per tonne due to the savings in the number of columns and related workmanship. Also the resultant column-free space generally adds value to a project.

Complexity

Modern CNC fabrication equipment can cope with complex individualistic designs but, in general, the more complex the fabrication required the greater the cost.

Wherever possible, leave the choice of the connection detail to the steelwork contractor as the type and design of connections directly influences the total frame cost.

If you wish to keep costs down – keep it simple!

Materials

Avoid mixing steel grades where possible and rationalise the range of section sizes/tonnages used in order to minimise cost, lead times and shop handling.

In general steel grade S275 will be adequate, unless the strength requirements of grade S355 are essential.

Architectural Influence

Ensure that unnecessary finishing is not specified and that any applied corrosion resistant coating is appropriate for

the environmental conditions to be encountered. Grinding of welds is usually only required for exposed steel in close proximity to a building's occupants.

Quality of Engineering and Documentation

Completeness and accuracy of information are vital for a steelwork contractor to be able to properly assess the work involved. Where the steelwork is pre-designed, ensure that all member sizes are shown and that the connection forces are shown or are available.

Lead Times

Steel construction “lead time” figures of, say, 10 to 12 weeks are often quoted in journals. The figures usually quoted are in fact “length of order book”.

The information that specifiers really need to know is the elapse time from placing an order to the start of delivery of steelwork to site and commencement of erection. Obviously this varies depending upon the size and complexity of the project, but for relatively straightforward projects the period from receipt of order with full information to start of delivery can be typically around 6 to 8 weeks.

Similarly erection times can vary depending upon location and complexity of the project, but for, say, an 8-storey office building, typically around 1,500 m² of floor area can be erected per week, using two cranes.

Key Points

1. When parties have successfully worked together in the past lower prices can be expected.
2. Early selection and appointment of the steelwork contractor.
3. Making interim payments for work and materials in the process of being fabricated but not yet delivered or erected, will often lower the overall steelwork costs and improve contingency planning.
4. Good site co-ordination will facilitate a smooth running project.
5. Conformance with the National Structural Steelwork Specification for Building Construction (NSSS) will reduce uncertainty.
6. Consider larger bay sizes, where the extra weight due to longer spans may be totally offset by the reduced price per tonne and the saving in number of columns.
7. Leave the choice of the connection detail to the steelwork contractor as the type and design of connections directly influences the total frame cost.
8. Avoid mixing steel grades where possible and rationalise the range of section sizes/tonnages used in order to minimise cost, lead times and shop handling.
9. If you wish to keep costs down – keep it simple.

Further sources of Information

1. **Steel construction industry directory for specifiers and buyers 2007. Published by the British Constructional Steelwork Association, 2007**