

Media Release exclusive for “Build”
8 August 2005



“What’s the cost of the steelwork?”

It’s a simple enough question, and the answer is often given in terms of dollars per kilogram. But it is seldom a simple calculation based merely on weight. The work done to the steel is the way the fabricator adds value and the various costs incurred, in cutting, preparing, assembling, drilling and welding, must be aggregated.

When a steel fabricator is asked to tender for a project, he will pitch according to the complexity of the work involved in detailing, fabricating, and erecting. Compare a steel lintel with a steel stair frame. The lintel might weigh twice as much as the stair frame, yet the latter’s cost per kilogram could be three times that of the lintel. Obviously, the stair frame is more complex and requires more time to fabricate.

INSERT PRICING EXAMPLES OF A LINTEL COMPARED WITH STAIR FRAME.
THE DRAWINGS WILL BE SENT SEPARATELY.

	Fabricate	Weight	\$/kg
Lintel	2.0 hrs	99 kg	\$3.90
Stair Frame	4.9 hrs	40 kg	\$9.10

As architects and structural engineers develop steelwork options, they often struggle to identify those that are the most cost effective. Builders and quantity

surveyors can also have difficulty evaluating steelwork variation claims. If changes to drawings are introduced, they can often increase the complexity and add to the work that the fabricator must do, but with little increase in the customary pay quantity, namely the weight. It is only fair that he adjusts his price, but he often encounters accusations that his new price is a fabrication!

Steelwork prices have indeed risen in New Zealand in the past eighteen months as international steel price rises have impacted on the local construction market. These international effects came on top of an already booming local construction market in which demand drove construction prices higher across the board. The costs of reinforcing steel, concrete formwork, pre-cast concrete, proprietary concrete decking and concrete placement all rose in the same period of time. Indications are that some reduction of construction pricing pressure is now occurring owing to an easing of supply pressure on internationally sourced materials and some cooling of local demand. However, it is early days.

It is difficult to conclusively assess the combined effect of all these varying price rises on all building structures. Actual construction price rises are also difficult to track accurately because of the vagaries of market bidding and the time lag between tender bids and construction completion in the construction market. A benchmarking study recently done by SCNZ to estimate the current cost of three equivalent ten-storey buildings however showed that steel construction options had maintained cost competitiveness with other structural alternatives. These buildings had the same architectural envelope and had been designed for New Zealand loading conditions. Both the superstructure and the foundation costs of each option have been assessed using current published estimating rates. The study reinforced the impact of foundation costs on the total cost. The lighter weight options required less money and less time spent on the ground.

Trying to evaluate design options without the appropriate information and justify a variation, often in an atmosphere of hostility, is never easy, but there is a solution.

SCNZ has been working to simplify the way steelwork estimating is done and increasing its reliability for decision makers at the design development stage. Software tools have been developed that incorporate a consistent approach to measurement and the application of base rates to steelwork. While estimating will always be a combination of measurement and market judgment, the estimating tools allow for more science than art in the process.

So when someone asks, 'What's the cost of the steelwork?' a reliable estimate can be quickly obtained, to within a good margin. That makes more sense than using the inappropriate \$/tonne rule of thumb for design option decision-making, or taking the view that the fabricator is the villain in the piece.

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