

AUSTRALIAN STEEL INSTITUTE

REVIEW OF STEEL COSTS IN MEDIUM RISE STEEL FRAMED BUILDINGS

August 2011



AUSTRALIAN STEEL INSTITUTE

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Introduction

This report has been prepared for the Australian Steel Institute (ASI) and provides comment on the market feedback and information received as part of our review of structural steel costs in medium rise steel framed buildings.

Background

This review has been undertaken following our engagement with the ASI for the preparation and periodic updating of the steel and concrete comparative cost models. These cost models were established in 2007 and were developed to provide a working model that demonstrated relative costs of post tensioned concrete versus structural steel framing for a medium rise commercial building.

The cost models were prepared to identify how the cost dynamics of different materials change from time to time and location to location in response to: market adjustment of prices; demand and supply relativities; changes in legislation; experience of market providers, and economic conditions.

Differences in economies, construction markets and pricing between Australian States were accounted for in the cost model by the preparation of individual models for New South Wales, Victoria, Queensland and South Australia. Rider Levett Bucknall (RLB) offices in Sydney, Melbourne, Brisbane and Adelaide undertook exercises in individually pricing the cost models, which were coordinated and assembled by the Sydney office.

Since the original cost models undertaken in 2007, the models were repriced and updated by each State in 2008, 2009 and 2011.

Following the 2011 update, the ASI provided market feedback received from their member steel fabricators, that there were discrepancies between the estimated price of steel in the cost models and what the steel fabricators considered were current reasonable prices. The market feedback identified that the current price of steel was considerably less than the estimated prices.

As a result of this difference and following discussion with the ASI, it was recommended that a holistic review of steel pricing be undertaken by RLB Sydney, including gaining market feedback and information received from steel fabricators across a number of States, to verify a current reasonable price of steel.

Approach / Methodology

In order to verify the reasonable price of steel for a medium rise steel framed building, it was necessary to gain information from industry participants. The ASI provided a list of member steel fabricators, who were familiar with the ASI cost model and the purpose of the costing exercise. The fabricators were considered to be medium to large sized companies who are currently involved in competitively tendering on structural steel construction projects and had a knowledge of the current market conditions.

RLB Sydney contacted each of the fabricators as identified by the ASI in order to discuss and gather information relating to the following:

- Steel prices on recent actual tendered projects;
- Estimated steel prices for the cost model;
- The nature of steel framed buildings and steel pricing;

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Approach / Methodology (Cont'd)

- Steel fabricators estimating and measuring process;
- Current market conditions and degree of competitiveness.

The fabricators identified by the ASI and contacted by RLB Sydney as part of the cost review are as listed as follows:

Company	Contact	Phone	Mobile	State
Steel Fabrications Australia	Lindsay Allen Simon Beddow	(07) 3169 7000	0402 221 346 0419 185 919	QLD
Gay Constructions	Brett Mathieson	(07) 3890 9500	0401 985 511	QLD
Sebastian Engineering	Mark Sgaravizzi	(02) 4626 6066	0411 076 000	NSW
Nepean Engineering	Col Poulter	(02) 4646 1511	0459 036 026	NSW
Page Steel Fabrications	Chris Piacentini	(03) 9931 1600	0438 355 393	VIC
Monks Harper	David Hentschke	(03) 9794 0888	0413 674 612	VIC
Stilcon	Laszlow Pulzar	(03) 9314 1611	0411 455 962	VIC
Manuele Engineering	Tom de Santis	(08) 8414 2000	0488 001 696	SA
Advanced Steel Fabrications	Nick Monda	(08) 8447 7100	0412 977 884	SA

Results / Market Feedback

The discussions with the steel fabricators highlighted a number of issues with respect to the estimating and pricing of steelwork in the construction industry, which may lead to misconceptions regarding reasonable market costs. These issues include:

- The problems associated with estimating using average tonnage cost rates rather than building up cost rates from first principles, taking into account steel supply, fabrication, erection, shop drawings, applied coatings etc;
- Inaccuracies in applying average cost rates against different types and sizes of steel members which may involve different proportions of the cost of supply, fabrication, erection;
- Misconceptions regarding the impact on steel pricing overall as a result of supply price increases, which forms part only of the overall steel composite price;

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Results / Market Feedback (Cont'd)

- The limited awareness in the industry generally regarding the cost of steel in medium rise steel framed buildings;
- The limited number of recent suitable steel framed medium rise buildings that can be used for cost benchmarking analysis;
- Preconceptions in the construction industry generally amongst builders, engineers and cost consultants regarding the cost of steel, which may not be based on the current market conditions or reflect the specifics of the proposed design.

From our discussion with the steel fabricators, we report that the comments outlined above were consistent between States and fabricators. We also report that the cost range advised by the fabricators was consistent in terms of the cost for steel per tonne for steel framed medium rise buildings.

The reasonable costs discussed by the steel fabricators were based on either actual recent tender information for a fully documented structural steel solution or estimated costs for the ASI cost model built up from first principles. Where the fabricators were unable to provide rates based on the above items, an opinion of cost was given as to what they would consider is a likely cost rate based on their experience as an experienced steel fabricator working in the construction industry.

The range of costs as discussed by the fabricators (as an overall cost rate \$/tonne) is summarised in the following table:

State	Overall Reasonable Cost Range Steel Framed Medium Rise	
	Low \$/t	High \$/t
NSW	\$3,400	\$4,000
QLD	\$3,500	\$4,200
VIC	\$3,000	\$4,000
SA	\$3,500	\$4,100

The above table provides a guide as to the averaged reasonable cost range for steel based on the market intelligence. It is noted however, that rates \$/tonne for individual steel members could be both below and above the noted rates, depending on the specific member type and size.

The rates are composite rates that include for all works involved in the structural steelwork trade package including supply, fabrication, procession, shop drawings, transport, and erection.

The rates exclude GST, special finishes and coatings including fire protective coatings, managing contractor's preliminaries and margin and contingencies.

The rates are based on discussions with fabricators and information received in July and August 2011. The rates do not take into account any cost escalation or cost changes as a result of market fluctuations.

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Results / Market Feedback (Cont'd)

Fabricators advise that the rates achieved for a medium rise steel framed building are a result of the nature of steel framed medium rise buildings, where in particular fabrication costs can be significantly reduced due to the simplicity of the design and repetition of members. This contrasts with other common uses for structural steel including typical roof framing, portal framed construction and external wall construction.

The fabricators discussed that an important element in this concept, is that the simplicity of the steel framed medium rise building leads to cost savings across most aspects of their process including:

- Reducing or eliminating in house fabrication/processing where the merchant can pre drill and cut members to size;
- Use of machine fabrication for most items;
- Reduced shop drawing requirements due to repetition of member types;
- Reduced on site erection as all connections are bolted rather than welded;
- Reduced connection costs as connections are simplified and repetitive.

The high tonnage of steel within the steel framed building, together with the low labour required in the fabrication and erection phases of the structure was found to offer a price advantage in lowering the overall rate.

In general terms, the fabricators considered that by utilising the most efficient engineering designs, the steel framed medium rise building should achieve the lowest steel rates \$/tonne, in comparison to other typical uses for structural steel in the construction industry.

A further aspect identified through discussion with the fabricators was by utilising steel fabricators for the installation of the bondek as part of the steel structure, the cost \$/m² for the bondek element can be reduced significantly below what is typically considered a reasonable rate for bondek when used as part of a reinforced concrete structure. Feedback from the fabricators indicated that supply and installation of the bondek in the steel framed building would range between \$45/m² and \$55/m², which may result in a \$20/m² to \$30/m² reduction compared to other procurement methods.

Conclusion

This report provides a review of steel costs in medium rise steel framed buildings based on market feedback and discussions. The report was prepared following requests from ASI that the RLB Sydney office undertake a holistic review of the cost of steel as a result of discrepancies between estimated pricing and ASI member steel fabricator feedback.

The results from the research undertaken indicates that the current market cost for steel in medium rise steel framed buildings ranges from the low \$3,000's to low \$4,000's.

The rates advised by the fabricators are specific to the steel framed medium rise building and reflect a 'best case' engineering design, where repetition of members and simplicity of design results in minimal fabrication and procession, reduced erection, shop drawings and other aspects of the steelwork process.

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