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in



Timber buildings – evidence of lower costs emerge

Willow Aliento / 16 June 2015

So timber buildings really do cost less to build. New research appears to prove the case and the timber development sector is educating the rest of the industry. Timely too, as the National Building Code has proposed that timber buildings up to eight storeys could fall under the deemed to satisfy provisions. Meanwhile a New Zealand company is eyeing the potential and plans to operations to supply Australian market. Willow Aliento investigates.

A seminar series touring the country is comparing detailed designs of four commercial building types that show building in timber costs less than conventional materials.

It's a timely initiative, with proposed revisions to the National Construction Code out for comment that will allow massive timber buildings up to eight stories as a Deemed to Satisfy solution for residential, commercial and hotel construction projects.



The initial work, *Commercial Building Costing Cases Studies – Traditional Design versus Timber Project*, forms part of a final, detailed report that is due to be released after the seminar series. It developed detailed designs of four major commercial building types in both timber and conventional construction, with a quantity surveyor preparing cost estimate comparisons for each solution.

(left) Timber buildings – good looking and now looking cheaper too

Chief executive of the **Timber Development Association Andrew Dunn**, who authored the work and undertook a significant part of the research, said the analysis showed that timber buildings would be 10-15 per cent more cost effective to construct across many building types.

The most substantial savings for timber construction compared with conventional methods were:

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- Commercial office building – 12.4 per cent
- Aged care facility – 13.9 per cent
- Apartment building – 2.2 per cent lower
- Portal-framed industrial shed was 9.4 per cent lower cost

University of Technology Sydney co-developed the research method and collaborated on detailed design, cost and site productivity issues. Solutions were tested against available products, including cross-laminated timber, laminated veneer lumber and glulam and existing supply chain for these products. Teams working on the research included Arup, AECOM, Studio 505 and Fitzpatrick + Partners. Building Cost Information System, part of Royal Institution of Chartered Surveyors, provided costings for timber against more conventional concrete framed or steel framed building in an urban location.

The solutions also had to be tested against available products, including cross-laminated timber, laminated veneer lumber and glulam, and the existing supply chain for these products. Commercial and residential building designs included analysis of heating, ventilation and airconditioning, facade and acoustic considerations.

The research noted that more savings were likely to emerge with greater adoption of timber in the construction sector.

Mr Dunn said other savings not captured in the research included difficult sites, for example, as a lightweight solution for sites with poor ground conditions where conventional construction would require extensive and expensive pilings, footings or geotechnical engineering. Timber could also be a solution for sites with restricted access for off-site modular and prefabricated construction.

Seminars

The TDA is currently running a series of mass timber construction seminars with the Forest and Wood Products Association, in conjunction with the Australian Institute of Quantity Surveyors. According to **Tony Thorp**, director, architecture at Reid Campbell, who attended an AIQS presentation in Sydney, the most important element of the study was that the designs and costings would be available to the industry and that the comparative costings would be in an operable format to allow current rates to be applied.

“In this way the industry will have a very well considered platform from which to start exploring the pros and cons of moving to timber construction,” Mr Thorp said.

“In Sydney, where the risk of price escalation in traditional construction is becoming real, this is very timely.”

- See preliminary costings comparison findings [here](#).

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Mr Thorpe said he believed clients would generally be open to the idea of massive timber buildings, but that the industry had not been able to provide a “level of certainty” around pricing.

It was not competitive in terms of its risk profile compared to conventional construction, he said.

Another barrier was the slow “innovation diffusion process”.

There needed to be a substantial demonstration of massive timber construction in terms of numbers of projects for the material to gain contestability. At this point, there was no demand pull from clients, Mr Thorp said.

Supply security is critical

There also needed to be an alignment between forestry capabilities, the supply chain for massive timber and industry capacity. This would then lead to the industry operating within a framework that can respond to demand, is coherent, and has a reasonable risk profile.

“The work that the timber industry is doing to build confidence in the full supply chain and in promoting the potential advantages of switching to timber augurs well for a significant acceleration in massive timber construction over the next three to five years.”

Design is important

According to Mr Dunn there also needed to be a shift at the design end of the equation.

“Timber should always be part of the materials consideration, and designers should consider it from the outset as part of the portfolio of possible materials solutions,” he said.

“And the tougher the job [in terms of the site] the better timber will stack up [from a cost point of view].”

Environment is also a key rationale

He said the research looked purely at construction costs, and does not consider the environmental benefit. This, however, was another relevant consideration, and one that can also add to the financial benefits throughout the building lifecycle, he said.

New building code will help

Mr Dunn said the proposal to revise the National Construction Code to allow timber buildings up to 25 metres tall – about eight stories residential or seven stories commercial – as a Deemed to Satisfy Solution will strengthen the case for using massive timber as a solution.

FWPA modelling indicates that this may result in construction cost reductions of 10-15 per cent, and new material options could create new scope for architects and designers. The NCC’s proposed requirements also incorporate fire protection measures based on engineering studies that have been carried out over the past few years.



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Another positive development is the announcement by New Zealand CLT manufacturer **XLAM** that it intends to expand its NZ-based manufacturing operations in order to supply Australian massive timber construction projects. The company is also looking to establish an Australian-based CLT manufacturing plant in the near future. (More on this to come).

Mr Dunn said being able to procure CLT from just across the Tasman or at some point within Australia very much reduces the risk profile of the material. He said there was some resistance to the idea of sending a tall building around the world as a flat pack, as had to be done for Forte.

“We are finally going to get what we’ve been asking for,” he said.

The other benefits of a local industry will be the removal of the constraints of shipping, reduced timeframes within the supply chain, and taking out the cost risks associated with movements in the exchange rate.

Mr Dunn said it would also allow the production of CLT from Australian timber that is currently being used for lower-value end products such as pallets and packaging. CLT can use lower grade timbers than are required for standard beams and struts, and also shorter pieces.

“What [timber construction] is allowing us to do is value-add to products we get poor value out of at the moment,” he said.

“Timber is lightweight and easy to machine – it lends itself beautifully to prefab. There is so much potential in prefab.

“The other thing is, as there is more demand for timber, there will be more wood planted.

“And if Australia can’t do it, there are other countries that will.”

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