TIMBER NOGGINS

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How effective specification can bring benefits

The building industry has seen changes in the recent past following the presence of more non-conforming and non-compliant products in the market. The renewed scrutiny on product substitution enforced by the Victorian Building Authority (VBA), Queensland Building and Construction Commission (QBCC) and other similar bodies across Australia has started to make life difficult for the builder.

Our customers have been talking with us about ways to enable them to use their preferred product on-site. That is to say: substituting product that has equivalent performance to what was originally specified by the engineer.

Below are some examples of how product substitution can be facilitated through effective specification. Hopefully, this can then serve as a guide for truss and frame companies and builders to ensure their preferred products get specified in a way to make supply easier.

LVL SPECIFICATION

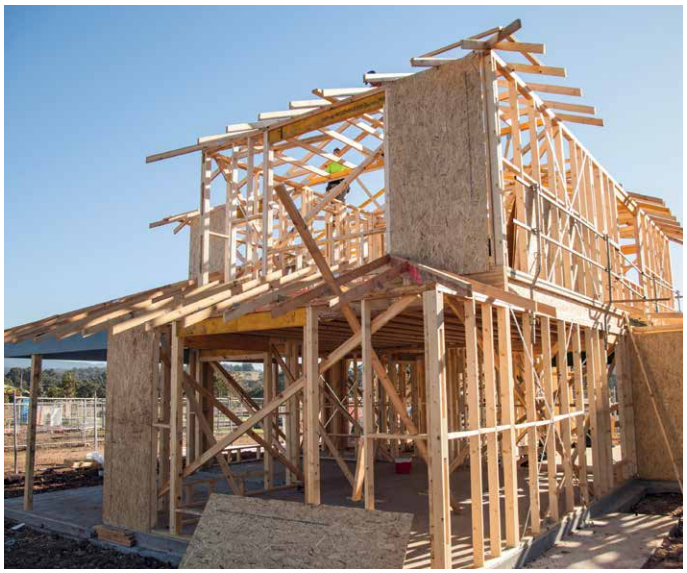
Unlike MGP, F-grades or glulam, LVL properties are not standardised and they vary between manufacturers. They are distinguished by their stiffness or 'E' value, with the most common being E13 or E14. The higher the E value, the greater the stiffness which in turn gives a lower deflection. For a rafter, beam, lintel or floor joist the design size is typically defined by the E value (stiffness), or 'controlled by deflection'. The strength properties of the LVL seldom influence the design.

However, in the context of domestic applications where deflections are usually limited to 10-12mm, a change from E15 to E14 or E14 to E13 will translate to less than 1.0mm increase in deflection. In light of this, and to give the builder greater supply point options, it is only reasonable to specify LVLs as "equivalent E14 or F17" (for historical hardwood sizes) or "as minimum E13" (for typical LVL sizes).

MAXIMUM LENGTHS

Another important aspect to keep in mind is that timber lengths are limited, and it is therefore necessary to understand the maximum available lengths of the selected timber in relation to the designed spans. If the situation presents itself, most designers would span a beam continuous over multiple supports to take advantage of increased design efficiencies. This will only work if timber lengths are long enough to meet this requirement. For example, 290x45 F17 rafter with a maximum available length of 5.4m cannot support a design with two 3.5m spans (requiring 7.0m lengths). LVL E14 in 290x45 (or even E13 in 300x45) is the answer in this case, as it can be readily sourced up to 12m lengths, and the design is automatically satisfied given all primary properties are equal or better than F17.

We have also seen specifications from engineers that require LVL lengths in excess of 12m (eg: 7m span rafters continuous over



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Above left: *LVL beams aren't standardised but are well documented.* **Above right:** *OSB Brace: a viable substitute for plywood.*

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two supports). The inclination on-site, in this case, might be to use two 7m lengths given that 14m lengths as required by design don't exist. This has obvious design implications and will require re-specifying by the engineer. Possible options are increased size, reduced spacing or, in extreme cases, provision of an adequate splice detail to maintain continuity.

SUBSTITUTING OSB BRACE

Plywood and hardboard (Masonite) are two sheet bracing products commonly specified by engineers. The inclusion of these products as standard bracing options in AS 1684 Residential Timber Framed Construction, makes it a convenient choice for specifiers. In spite of this, OSB bracing (eg: Egger OS'Brace) has become the preferred option for many builders over the past few years and its increased use was helped by the ease of substitution on-site.

Unfortunately now with the increased scrutiny on-site, the use of OSB brace has met with some roadblocks, sometimes leading to rejection on site due to explicit reference to plywood or hardboard in the engineer's design. Given this, a more generic specification for bracing units like "3.4 kN/m or 6.0 kN/m capacity" may be enough for easy substitution on site.

Egger OS'Brace is a product that has undergone extensive testing in Australia for use in wall bracing and has also obtained the necessary engineering certification. In standard applications using MGP10 framing, OSB has a 12.5% better capacity than plywood, and 16% better than hardboard. There are many reasons why builders like to work with OSB. It is readily available, resists distortion, splitting, delamination and buckling, and is also simple to install, cut, nail, screw and drill. Its fresh timber appearance is another attraction for the builder.

SPECIFYING FOR OPTIONS

We have highlighted a few examples that should encourage truss and frame companies or builders to revisit the engineer and request a change in the specifications, not just to suit their supply chain but also because in some instances the specified product is too fanciful for our world. For greater flexibility and ease of sourcing, LVLs are best specified as "equivalent E14 or F17" or "minimum E13" as discussed earlier. By the same token, sheet bracing specified as "equivalent to 3.4 kN/m or 6.0 kN/m" allows builders to use one of plywood, OSB or hardboard panels. T

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