GANG-NAIL GUIDELINES No.131

ANOTHER MITEK ADVANTAGE

LVL TRUSSES

Of the many innovative engineered timber products successfully introduced into Australia, two have successfully combined forces to collectively enhance domestic and commercial timber structures by achieving large clear spans and encouraging brave new architecture.

One recent outstanding example is the National Portrait Gallery built in Canberra (pictured).

The two products I am referring to are the humble nailplated truss and laminated veneer lumber (LVL).

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■ *Architectural trusses in foyer section of the National Portrait Gallery, Canberra.*

Engineered timber structures like these are gaining a foothold in commercial buildings, where steel and concrete once dominated.

The environmental benefits of building with a material that is a natural carbon store are becoming understood, recognised and valued by the general public.

There are a few key points worth remembering whenever LVL is used in trusses.

MANUFACTURER SPECIFIC

LVL is a generic term. Each manufacturer makes a different LVL product with unique structural properties according to their timber species, grades of veneer, types of glue and manufacturing processes.

Not surprisingly then, each manufacturer has to provide span charts and/or design software to ensure that their product is used safely and reliably.

Each product goes by its brand name. Unlike glulam, a LVL grading system does not exist.

For example, "GL10" is a glulam *grade* produced by several manufacturers to achieve properties set out in the Australian Standard; whereas "LVL13" is actually the brand name of one manufacturer, not a grade of LVL.

Hence, with LVL products, it is imperative that not only the correct sizes but also the correct brand products specified in the design details are used in fabrication and construction.

TOOTH JOINT GROUP

As with other timber products, a tooth joint group that classifies the ability of a nailplate to grip onto the LVL is a prerequisite for truss design.

The quality of the outermost layers of veneer held by the nailplate teeth dictates the veracity of this adhesion.

Frequent or large voids hidden in veneers just below the surface and overly dried veneers that split easily diminish tooth holding.

Before any LVL product can be introduced into truss fabrication, it needs to be tested and evaluated for its tooth joint group.

A truss detailer cannot design with one LVL product in the hope of substituting it with another "equivalent" product.

THICKNESS COMPATIBILITY

All products, whether they be steel, concrete, timber, sawn or manufactured have size tolerances.

For example, MGP timber has a tolerance between -0mm and +2mm of its nominated thickness. So a piece of sawn timber supplied as 35mm may be between 35mm and 37mm thick.

The tolerance for thickness varies between different LVL manufacturers and can be obtained from their technical data sheets.

The base thickness of some LVL products may not even be the same as gauged timber, e.g. 36mm instead of 35mm.

If LVL is mixed with gauged timber in a truss, it is important to minimise any difference in thickness across a nailplated joint.

Truss plants should regularly monitor nailplated joints whenever different timber materials are combined during fabrication and take appropriate steps whenever variation in thickness exceeds the limits specified by their nailplate supplier.

For related reading, refer to GN Guidelines 27, 42, 80, 101 and 112.

Continuing to bear these few important items in mind will ensure safe and reliable LVL trusses.

It will also be rewarding, to see more and more imaginative structures achieved using timber, in which these two products will assuredly play vital roles. TTN