GANG-NAIL GUIDELINES No.156

ANOTHER MITEK ADVANTAGE

COMMERCIAL REALITIES PART 2 - FRAMES

By TIM ROSSITER
Chief Engineer,
MiTek Australia Limited

In Part 1 of this article (May 2010), I referred to the care needed with contractual requirements of commercial work, such as a potential obligation to provide engineering certification for design and installation.

In the prefabrication industry, that often means both trusses and frames.

Take for example this extract from a job specification I recently encountered: "Engineering certification [is required] by an NPER registered structural engineer that the design and installation of the timber framing, bracing and hold down is structurally adequate for the required loading".

The way detailers design wall frames is typically quite different from the manner they do roof trusses.

Wall frame components are mostly selected from AS1684 span charts even if some critical components (e.g. lintels supporting girders) are specifically designed by structural software.

In residential construction, the onus is on the builder to build according to AS1684, and this is checked by an inspector experienced in timber construction.

This is not necessarily so in commercial work.

Unlike houses, where the builders and inspectors are well versed in AS1684, many commercial projects use workers who are not necessarily specialised in timber construction to install prefabricated frames and trusses.

These contractors, including their supervisors and inspectors, are often more accustomed to erecting steel or concrete structures than timber buildings.

They rely on detailed drawings and instructions from the supplier and cannot be depended upon to apply any inherent carpentry knowledge of their own.

For that reason, it is often necessary for the supplier to provide much more detailed information than is normally expected for a house, such as wall bracing specifications and positions, or tie down anchors and locations.

The preamble in AS1684 limits its scope to the "construction of timber-framed Class 1 and Class 10 buildings".

Although adding that it "may also be applicable to ... other classes of buildings where the design criteria, loading and other parameters ... are within the limitations of this standard", this requires a skilled knowledge and understanding of the design standards.

Be wary; some primary elements such as lintels, beams, posts or connections in buildings other than houses may need extra conservative designs.

Hence, wholesale selection of all timber components from AS1684 for commercial frames may not be valid.

To certify wall frame designs, an engineer has to be provided with full details to check all timber sizes, bracing and tie-down.

In addition, the engineer will require more time to check frames than trusses due the amount of manual calculations and cross-checks needed.

That is why it is vital to have a suitably qualified engineer involved from the quoting stage, not only to cover fee estimates but also to factor in the time it takes for a design check and certification to be produced so that payment is not withheld.

The discovery of a requirement for frame and/or truss certification has already caught some unwary fabricators by surprise.

By the time this revelation is made, typically towards the end of the project, there is a mad scramble to obtain engineering certification for installations which may already have been closed in.

This makes it almost impossible to carry out an adequate inspection.

It is prudent to normally allow for at least two inspections since the first one often picks up matters for attention which have to be re-inspected at a later date, prior to issuing a certificate.

Calling for an inspection too early, i.e. before the installation is substantially complete, may force repeated call outs needlessly.

Such unnecessary costs, delays and possible liquidated damages can be avoided if everything is coordinated well.

Commercial work can be quite valuable to your business. Involving engineering support early will certainly help and may contribute to avoiding costly mistakes.

Be very clear about the requirements and responsibilities that may be placed on you for frames as well as trusses, and ensure that they are properly covered in your quote and schedule. TTN