



ADVISORY NOTICE BUILDING

16A/04

Advisory Notices are issued to assist in the interpretation of the Development Act 1993

September 2004

PROFESSIONAL PRACTICE:

Proprietary Building Systems and Roof Trusses

The Building Rules assessment, and approval, of prefabricated proprietary timber roof trusses (and other building systems) has been a recent matter for considerable discussion and there appears to be uncertainty regarding how they are processed.

The recent collapse of a roof, which resulted in fatalities, has highlighted that some processes (commonly being used) are not meeting the basic needs of the community for proper checks on the design for safe building construction.

Accordingly this Notice is being issued to provide a consistent approach to the approval of such systems using the processes that are available in the *Development Act and Regulations*.

BACKGROUND

The change from traditionally framed timber roofs to prefabricated timber roof trusses has fundamentally changed the way in which buildings are constructed. Modern construction practices are now quite different to those that were used some 20-30 years ago. Significant components are now constructed off-site and the only work that occurs on site is the actual placement and connections.

New products such as steel framed systems are also now available and there needs to be a consistent approach to the assessment of building systems generally, particularly where they involve primary structural elements.

DISCUSSION

Building systems essentially use a software package to calculate a design solution for a specific building proposal. There is a high degree of reliance on the actual software to produce a product that is in compliance with the Building Rules. Essentially the only items that can be checked by a building surveyor are the input parameters. Under these circumstances the question that needs to be asked is: "Where is the independent check on the design?"

A building surveyor needs to consider two issues, **the system** itself and **the application** of the system to a particular building design. On both issues the building surveyor needs to ask the questions "Where is the evidence?"; "What am I approving?"

The system

Any system that is proposed to be used for a project, in order to meet the requirements of the BCA, needs some form of independent verification. Simply accepting a system on faith is not good enough. Any system should be able to produce evidence that the system meets necessary codes and standards.

It is acknowledged that the software for these systems can be impossible to fully check as they are often reliant on an operating system or search engine and may use proprietary spreadsheets or databases as the basis for producing results. As these sorts of products go through extensive testing both before release and in practice, it can be assumed that they have a high degree of reliability. The issue is more about how this technology is used to develop and support program packages for a particular building system. In particular:

- What testing has been done to substantiate the veracity of the results?
- Have the latest codes and standards been incorporated into the system?

These are basic questions to which there should be a reasonable response that gives confidence in the reliability of the building system. A product supplier (of such building systems) should be able to provide answers to these questions and take responsibility for them.

Certification by an 'independent technical expert'

The South Australian building rules have provisions in Regulation 88 for the structural component of a building to be certified by an 'independent technical expert' as defined by regulation 85. This is normally a certificate from an independent structural engineer (**one that is not only qualified and experienced but importantly has not been involved in any aspect of the relevant development including the design**) that they have checked the design and are satisfied that it meets certain codes and standards. In the case of building systems it would be reasonable to require a certificate that satisfies the two questions above. Such a certificate should state:

- The operating system and any proprietary software (such as EXCEL or ACCESS) that it is built on.
- Any test reports (or evidence of testing) that can be produced.
- The relevant codes and standards (including the version, year and latest amendment) that the programming is compliant to.

Further, it is desirable that the independent technical expert to provide a statement verifying that they have had no involvement or interest in the development pursuant to Regulation 85.

Provided the certificate is from an appropriately qualified person, the Act requires the assessing person to rely on that certificate.

Relevant codes and standards are constantly being revised and refined, and the software (that is basis for most systems) also needs to be updated. It is therefore important for the building surveyor to know that **the system meets the requirements of the latest codes and standards** referenced in the BCA.

All roof/wall/floor framing systems (steel or timber) should be able to produce evidence of compliance with the BCA.

The application of the system

Having been satisfied that a recognised or certified system is being used that meets current codes and standards, the building surveyor then needs to determine if it is being applied appropriately to the proposed building design:

- Does it fall within any limitations on the system?
- Are the applied loads appropriate (e.g. wind speed)?
- Are the spans and spacings consistent with the drawings?
- Are there any special members that need to be designed?
- What are the proposed members sizes and do they look reasonable?
- What are the connection details, tie downs etc?
- Are there any special precautions to be taken during erection that may warrant a mandatory notification/inspection?

Once satisfied with the results of applying the system to the building, the building surveyor is in a position to grant the consent.

The documentation that forms the consent should have sufficient detail regarding the building system (member sizes, bracing, tie-down etc.) for an inspector to be able to verify that what is being constructed is the building system as designed and approved for the particular project.

Assessment

Section 3(f) of the Act outlines the objective of enhancing the amenity of buildings and providing for the safety and health of people who use buildings. The object of the Act is achieved through the application of the Building Rules and the building surveyor's assessment for compliance with the Building Rules. Accordingly, the building surveyor has a responsibility to ensure that the object of the Act is being achieved through the diligent application of the Building Rules.

If the truss framing system and the application of the system to the particular project is not identified when the application is lodged then the required information (for a full and proper assessment of the application against the Building Rules) is incomplete. A number of dubious and probably invalid conditions are being used on building rules consents. Past court decisions indicate that conditions on consents must be final, that is, not require a subsequent decision or consent (e.g. truss calculations must be submitted to the relevant authority prior to that stage of construction on site). Such a condition necessitates another assessment and consent. An invalid condition may invalidate the development approval.

However, of more concern is that some conditions provide for no assessment at all (e.g. 'the timber trusses shall be designed to comply with AS1720 and installed in accordance with AS4440'). It is mandatory that there be an assessment of the proposed system to be used under the Building Rules,

and a failure to provide such a check is a fundamental failing in a building surveyor's duty of care.

Such conditions, if not fulfilled, also make it impossible for inspections to be undertaken as the construction details are unknown.

Any departure from the process provided for in the Building Rules and the provisions of the Act should be avoided.

Further information

Department of Transport and Urban Planning

Planning SA

136 North Terrace Adelaide
GPO Box 1815 Adelaide SA 5001
Telephone: 8303 0600
www.planning.sa.gov.au/building_policy/

Contact:

Don Freeman, Manager
Building Policy Branch
Level 4, 136 North Terrace Adelaide SA
Telephone: 8303 0602

ISSN: 1443-8038