FIRE DESIGN AND BUILDING CONSENTS

The Fire Service has been part of the building consent application process for over 2 years. They're finding the quality of fire design documentation submitted needs to improve.

By Simon Davis, Engineering Manager, New Zealand Fire Service, Auckland

Among the many changes the Building Act 2004 introduced was incorporating the New Zealand Fire Service Commission into the building consent application process. In April 2005, the New Zealand Fire Service started reviewing, on behalf of the Commission, the fire designs submitted with building consents. Since then the Fire Service has reviewed over 1,800 consents and provided comment back to building consent authorities.

Some disturbing trends have emerged from these reviews. This has resulted in the Fire Service applying to the Department of Building and Housing for determinations and one ban.

In late 2006 the Fire Service Commission requested audits of the Fire Service work. These resulted in the publication of two independent reports that raise questions about the quality of fire engineering designs submitted.

At the same time, the Institute of Professional Engineers instigated an investigation into fire engineering. A taskforce developed terms of reference, followed by a report with 11 recommendations for remedial action.

The Fire Service and the Act

The Building Act 2004 requires building consent authorities to forward applications for specified buildings to the Fire Service Commission. The specified buildings are defined by the Department of Building and Housing and have been gazetted in NZ Gazette 56. The relevant building types to be forwarded rely on performance-based or specific fire engineering designs and require an approved evacuation scheme.

The Fire Service engineering unit, staffed by qualified fire engineers, undertakes reviews on behalf of the Fire Service Commission. These are required to occur within 10 working days. Reviews are based on best practice guidelines such as the Construction Industry Council design documentation guidelines and the International fire engineering guidelines.

The engineering unit then provides advice to the building consent authority on the fire engineering design of the buildings. The building consent authority is obliged to consider this advice when deciding whether to issue the building consent.

The advice is in the form of a memorandum covering the provision for means of escape and the needs of the Fire Service to enable it to undertake fire fighting. The Building Code Clause C Fire safety defines 'Means of escape from fire in relation to a building that has a floor area,' (a) means continuous unobstructed routes of travel from any part of the floor area of that building to a place of safety; and (b) includes all active and passive protection features required to warn people of fire and to assist in protecting people from the effects of fire in the course of their escape from that fire.'

These two aspects taken together require the Fire Service to provide advice on a substantial proportion of the fire engineering design.

Construction industry guidelines

Poor documentation impacts heavily on the profitability of a building project. To address this the New Zealand Construction Industry Council developed design documentation guidelines that split the design process into five distinct phases:

- concept design
- preliminary design
- developed design
- detailed design
- construction design.

These guidelines list the expected inputs and outputs from each design stage. Importantly, they indicate the level of documentation that should be provided to the design team, lodged for consent and provided at the end of the project.

Fire engineering guidelines

The International fire engineering guidelines use a similar process. These guidelines were provided as advice by the Department of Building and Housing under Section 175 of the Building Act 2004. They provide a logical process to develop a design.

The guidelines identify the first step in any building project as establishing the design brief. The most effective method to do this is to get the project stakeholders together to discuss their expectations. These expectations are then collated into one document called a fire engineering brief.

This document should contain the agreed parameters of the design and include the:

- scope of project
- principal building attributes
- dominant occupant characteristics
- performance requirements
- methods of analysis
- acceptance criteria
- standards for construction, commissioning management and maintenance.

The establishment of these details allows the designer to proceed with assurance.
Follow the best practice guidelines

These best practice guidelines ensure that the building consent process is as efficient as possible. If all stakeholders agree at the concept design stage what the acceptance criteria are, how issues are to be assessed to demonstrate that the acceptance criteria have been satisfied, and what documentation is to be produced, there should be no surprises or delays at the consent application stage.

When the design achieves all of the criteria established and accepted at the fire engineering brief stage, approval of the building consent should be a formality.

Unfortunately the current norm is to develop a design in isolation from the stakeholders. This results in incomplete and conflicting design documentation being submitted with the building consent application. The outcome is weeks of wasted time and significantly higher regulatory cost, neither of which are good for the client or the professional fraternity.

A number of documents have been produced that give clear guidance to practitioners on the necessary improvements in design documentation. The next step is for the industry to adopt these guidelines.