



NEW FIRE SAFETY LEGISLATION – TOP TIPS FOR ARCHITECTS

If the architect's job was not already complex enough, recent and pending legislative changes, coupled with a move away from prescriptive legislation to solutions that are based on fire engineering principles have given them a whole new set of challenges with which to contend. Here, Paul Bryant, CEO of Kingfell Plc, one of the UK's most respected fire safety engineers, offers some timely advice.

In the UK, the introduction of the RRFSO – the Regulatory Reform (Fire Safety) Order – now planned for October 2006, is going to see an increase in buildings designed around fire safety engineering principles, and fewer that are built using prescriptive standards. Although this legislation applies only to England and Wales, in other parts of Britain and indeed in many mainland European countries, this switch to a fire safety engineering approach is already becoming well advanced.

In many ways, this is seen as good news by many architects, who welcome the change as a major step towards greater design freedom. It presents them with the opportunity to rethink structural boundaries, use a wider choice of materials, and make more creative use of space. The challenge though is that the move away from prescription – where at least the parameters are established and well known - demands a much higher level of expertise in a profession that seems to be already expected to be expert in every aspect of the built environment.

CALL IN THE EXPERTS.

So, my first piece of advice is, perhaps predictably, to use the services of a qualified and competent fire safety engineer. Sadly, unlike the architectural profession, the term fire safety engineer is not protected, and, certainly in

England and Wales, the RRFSO is sure to bring in its wake a number of “specialists” that lack all but a rudimentary understanding of fire safety. Seek out a consultancy that employs qualified people; one that can offer the full gambit of fire safety planning techniques, such as computer-aided fire and smoke modelling and fire safety strategy development; one that has worked on complex structures and can offer expertise that adds value to the design process.

Coupled with this is the need to involve the fire safety consultant early in the design process, and then throughout the detailed design and construction stages. Fire safety engineering is becoming an ever more complicated subject; new solutions are being devised and new products – both active and passive - are coming onto the market at an unprecedented rate. This enables the engineer to open up avenues that, perhaps, the architect had not even contemplated.

It is vitally important to treat the engineer as part of the team, as you would the quantity surveyor or building cost consultant, the mechanical and electrical services engineer and the structural engineer. So, involvement throughout the detailed design and building processes also ensures that the engineer’s fire safety strategy for the building is not compromised when the inevitable alterations are implemented.

UNDERSTAND THE FIRE ENGINEER’S CONTRIBUTION.

Understanding the fire safety engineering design process can only help the architect to appreciate the value that the engineer’s contribution can make.

As, internationally, an increasing number of buildings are being designed that are outside of the scope of prescriptive guidance, the engineer’s first task will be to develop a solution that uses the appropriate country’s methodology. In the UK, this is BS7974. This is followed by a qualitative design review exercise and a quantitative analysis. Once the engineer is satisfied with this analysis, a fire strategy can be finalised.

Where only parts of the building are outside the scope of prescriptive guidance, the engineer will use comparative or deterministic analysis, and evaluate the solution against the architect’s design aspirations. The successful conclusion of any matters that arise from this stage also leads to finalisation of a fire safety strategy.

In addition to interpreting prescriptive fire precautions the fire safety engineer will utilise several sophisticated techniques to develop the building’s fire safety plans. He will use such tools as fire risk analysis; fire and evacuation modelling for complex buildings; and fire growth and development modelling.

But it must again be stressed, that this fire safety solution relates only to the design upon which the strategy is based. It is important for everyone involved in the design and construction process to fully appreciate that what might appear to be a minor design change can significantly jeopardise the validity of the fire safety strategy. It would be misleading to cite examples of how or where this might occur, as the list is virtually endless. However, the fire safety engineer's advice to an architect contemplating a change would be to first seek professional guidance.

USE THE EXPERT'S HELP.

So, the process preceding the preparation of a building's fire safety strategy is painstaking and demands that the engineer has a thorough understanding of the structure and environment that the architect is striving to achieve. Its preparation can also assist the architect to provide his or her client with a more sustainable solution.

For example, in the UK, the introduction of the DDA – the Disability Discrimination Act – has seen a lot of attention being placed on accessing a building. However, it is equally important, perhaps more so, to ensure that disabled people can escape from the building. When producing the fire safety strategy, the engineer will always seek to know to which area of the building are disabled people to be given access. Similarly, the engineer may also want to take into account those areas of the building where, at some future date, disabled access and egress may be required. This may well lead to the architect incorporating features into the design to ensure that the building meets the client's needs in the future, as well as today.

Advice from the fire safety engineer can also help to ensure that the design of the building also takes account of external fire spread, to safeguard those in close proximity and, potentially, those fighting a fire should one break out in the building. Likewise, the engineer can advise on fire safety measures to ensure – as much as is possible – the safety of brigade personnel entering the building in the event of an emergency.

Unlike solutions based on the application of prescriptive measures, those based on fire engineering principles have the potential to be challenged, particularly as there may well be more than one possible solution, but only one that meets the architect's design criteria. Undoubtedly, the potential for disputes will be influenced by the competence of the individuals who are in disagreement, reinforcing the need for the architect to use the most expert help available.

SHARE A COMMON AGENDA.

From experience working with a number of architects, I am well aware of how stimulating the relationship can be. However, for those architects that have in the past predominantly designed buildings where fire safety is based on prescriptive measures, their experience might have led them to the conclusion that the engineer's role is one that inhibits creativity.

This is certainly not the case where fire engineering principles are adopted; where the fire safety engineer, far from limiting the architect's creativity, can often expand the designer's horizons. Indeed, there have been innumerable buildings designed recently where, had fire safety engineering principles not been creatively applied, it is arguable that the buildings, in the form in which they were designed, would never have been built. Each is a testimony to the architect and the fire safety engineering solution.

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