

TECHNICAL NOTE No. 51

June 1992

Updated January 2006

Fire Protection

Recent developments in the standards which people will accept both voluntarily and through legislation have created additional problems in the proper repair and maintenance of older buildings. It is hoped that these brief notes will help to prevent the needless loss of historic detail in attaining increased standards and be a guide to good practice.

Fire Protection

The present requirements are administered through the Building Regulations (NI) Pt E and Pt EE but some classes of buildings open to the general public and assemblies of people must obtain a certificate from the Fire Authority. Precautions fall into two main categories:

(A) Compartmentation

Fire protected compartments may be required horizontally, affecting floors and ceilings or vertically affecting doorways, stairs, screens and partition walls.

Floors and ceilings – the simplest way to achieve increased fire protection is to apply a fireproof lining to the underside but this may destroy decorative plasterwork and other historically important detail.

In the case of exposed joists there must be enough surplus material (ie structural oversizing) to allow a structural strength giving deflection no greater than $1/30^{\text{th}}$ of the span after exposure to fire during the specified period for fire resistance. The addition of protective fillings between the joists or the addition of a protective lining to the floor above will usually allow decorative ceilings to remain undisturbed. The building Regulations (Part E) illustrate some methods of fire proofing from above.

Doors – the simplest means to achieve increased fire protection for a panelled door is to face the door with a sheet material having the approved fire rating and, if necessary, to increase the rebate on the frame.

In most instances the increased rebate on the frame, if carefully detailed, can be achieved without serious disruption of the architectural detailing. An alternative can be to fit an intumescent strip.

The door itself will have a framework (ie jambs, rails and muntins) which will normally meet all but the most severe fire protection requirements; however, the panels may not. If there is a door of the same construction which can be sacrificed it may be tested to the British Standard. Otherwise the options are either to dismantle the door and refit panels using a material having the required fire resistance (where architectural detail is important the old panels can be spilt to make veneers) but in many cases intumescent paint and strips will suffice. English Heritage have produced a detailed Guidance Note (Timber Panelled Doors and Fire, London, 1997.) which shows constructions

that have been tested and approved.

(B) Escape:

As well as the required standards for doors discussed above, the enclosing wall, floor and ceiling surfaces must meet requirements in respect of spread of flame. These standards can usually be attained without detriment to design detail. Additional fire protecting screens may be required; it is usually possible with care to design these in such a way that architectural detail, for example, plaster cornice mouldings, are not damaged.

Alternatively, imitative details can be introduced to panel out the ceiling in a way that includes the new screen into the overall modified design.

As well as protection of existing stairways, it may be necessary to provide a new means of escape. Very careful consideration must be given to the location and design of any new structure. So that proper thought is given to the matter, the fire protection requirements must be researched at an early stage; last minute hurried decisions can be catastrophic to the long-term appearance of a building.

Some new uses will require the installation of heat or smoke detectors. All too often the details of this type of installation are left to the operatives doing the installation without any proper forethought. This lack of consideration can lead to serious architectural damage in high quality historic interiors. The type of system, location of the detectors and routing of the wiring should all be planned in detail to cause as little visual disruption as possible.

Fire Engineering

Fire engineering is the science of creating a bespoke fire safety solution for a building. Consultants may use a combination of techniques to ensure that a space is safe for occupants. Such a technique which is accepted by the building regulations can be very useful in maintaining the character of a historic building which was designed without current safety standards.

Fire Risk Management.

Much published information and regulation in regard to fires is based upon public safety concerns. Bear in mind that for an historic building the fabric itself is worthy of being saved. Such an analysis is likely to result in increased protection measures but also in the consideration of management techniques to minimise damage should such an emergency arise. TAN 22 by Historic Scotland looks at this area in detail.

Further Reading:

TAN11 Fire Protection Measures in Scottish Buildings, Historic Scotland, 1997

TAN14 The Installation of Sprinkler Systems in Historic Buildings, Historic Scotland 1998

TAN22 Fire Risk Management in Heritage Buildings, Historic Scotland,

Timber Panelled Doors and Fire, English Heritage Technical Guidance Note, London, 1997 ref XH20054.

Fire Safety in Cathedrals, Notes 1- 4, English Heritage, London, 1997, REF XH20050-53.

Technical References

Building Regulations (NI) Technical Booklet E,- Fire Safety, 1994.

Environment and Heritage Service

Built Heritage

Protecting Historic Buildings

Waterman House

5-33 Hill Street

BELFAST

BT1 2LA

Tel: 028 9054 3145