Fire Protection for Heritage Buildings

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How many fires are there in heritage buildings?

Uppark 1986

Prior Park College 1991

Windsor Castle 1992

Edinburgh 2002

Chester 2002
We do not know how many fires we have in heritage buildings!

- There are no statistics

90% of accidental fires self-extinguish or are dealt with by occupiers

- Not enough fuel
- Not enough oxygen
- Switching off electrical circuits
- Water
- Sand
**Triangle Of Fire**

- Heat
- Oxygen
- Fuel

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**Auto Ignition Temperatures**

The temperature when an item will automatically ignite in air without the presence of a flame

- Petrol 400°C
- Pine 427°C
- Oak 482°C
- Propane 540°C
- Pitch 500°C

- Insulating Foam; Non Flammable
- Melting Point of Lead; 327.5°C

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**Flashpoint**

The temperature when an item is warm enough to give off flammable vapours that will ignite with a flame

- Petrol 18°C
- Pine 250°C
- Oak 300°C
- Propane -130°C
- Pitch 200°C

- Temperature of propane flame tip 1995°C +
Determination by Secretary of State 2008

It is considered that the existing doors (even with self closing devices fitted) cannot be relied upon to prevent the egress of smoke at the early stages of a fire.

The existing bedroom doors cannot be described as smoke stopping doors and the corridor is not adequately protected from smoke.

If the rooms in dispute are continued to be used as bedrooms it is considered appropriate to undertake the following measures which enable an appropriate balance to be struck between ensuring sufficient fire safety measures are in place for the safety of people and maintaining the historic fabric and character of the building:

(i) Upgrade the doors to achieve a period of fire resistance of 30 minutes, with smoke seals; and self closing devices

4.6. The above measures are commensurate with the enforcement notice issued by the Fire and Rescue Authority.
BRE Fire Testing 3M Double Cube

Chatham Row Test
Fire Loading
40.42 kg/m²
10.32 kg/m³

Proposed Room Size for Fire Testing

8M

4M

5M

10M

34 Minutes
Approved Document B v2
Buildings of special architectural or historic interest

• 0.35 Some variation of the provisions set out in this document may also be appropriate where Part B applies to existing buildings of special architectural or historic interest, where adherence to the guidance in this document might prove unduly restrictive.
• In such cases it would be appropriate to take into account a range of fire safety features, some of which are dealt with in this document and some of which are not addressed in any detail and to set these against an assessment of the hazard and risk peculiar to the particular case.

Approved Document B

• 0.32 Factors that should be taken into account include:
  • The anticipated probability of a fire starting
  • The anticipated fire severity
  • The ability of the structure to resist the spread of fire and smoke and;
  • The consequential danger to people in and around the building

Communities and Local Government

Determination on the suitability and sufficiency of a fire risk assessment in a hotel in respect of the adequacy of the existing bedroom fire doors

The Secretary of State has determined that the appropriate remedy, is for the responsible person to prepare a new risk assessment in which the absence of intumescent strips and cold smoke seals on the existing bedroom fire doors is recorded and justified.
27M x 13 M = 351 Sq M x 12 M = 4212 Cubic M

200 Chairs & 0.2 MW each = 40MW

40/351 = 0.1 Mw/M

Door FR 20

Glasgow School of Arts Fire
12.29 May 23rd 2014
Cost of Sprinklers
£16 per square Metre
Plus tanks and pumps
Cost of Sprinklers

There are other costs!

- Moving the objects £4000 per room (£320,000 )
- plus specialist conservators if carpet is fragile
- Project Collections Care Assistant and conservator for supervision (15 months for 12 month project £45,000 & £22000 for CCA
- Documentation for object movement £ 22,000
- Possibility of an electrician to move chandeliers, picture lights case lights, etc.

Cost of Sprinklers

- Protection of in situ objects
- Packing material for moving and storing small objects
- Purchase of racking within rooms used for temporary storage
- Building works, lifting floorboards, notching joists, chasing walls and making good.
- Project manager for works
- Loss of income during project

How do you prioritise?

Stokesay Gatehouse

Marble Hill House

£16.00 per Square Metre  £73 per Square Metre

£155,840  £674,520
Why Do PVC and CPVC Pipes Fail?

By Dr. Duane Priddy, Plastic Failure Labs, Midland, MI

Questions

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