‘Discovering Building Control’
A talk given to the Fire Safety Engineering Group of the Association of Building Engineers, London
by
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Building Regulations 1991, fire regulations

• B1 Means of warning and escape
• B2 Internal fire spread (linings)
• B3 Internal fire spread (structure)
• B4 External fire spread
• B5 Access and facilities for the fire service
Nortel Telecommunications HQ
Crown Moran hotel Cricklewood
Tally Ho complex under construction (December 2003)
My experience fitting me for work as fire consultant to Building Control

- BISRA - inventor of frameless steel building using sandwich panels with PU foam cores
- Dunlop Rubber Co - product development of plastic foams in buildings
- British Steel - research into steel and fire
- Pell Frischmann and Partners - partner in charge of M&E Dept of 35 engineers
- Fire Research Station, BRE - various management and research jobs over 20 years
- City University - study for PhD in structural fire safety
- Fire Safety Consultant - for ten years
Satisfying Fire Regulations

- Functional regulations
- Approved Document B
- Freedom to use Fire Safety Engineering (FSE) approach
What does a good consulting FSE have to offer?

- In-depth understanding of FSE techniques
- Ability to understand, make, challenge and check smoke control calculations
- Ability to check radiation calculations for building separation
- Application of good numerical skills
- Good understanding of the principles underlying AD B
Why does a consulting FSE get into BC work?

- In my case I was asked by Head of Building Control Department, London Borough of Barnet, to check the fire safety engineering aspects of 3 large projects. (Nortel Telecommunications HQ, Crown hotel and Tally Ho complex, in total amounting to over £1m). Other smaller projects followed on.
Tally Ho Arts Centre under construction
Tally Ho multiple-occupancy complex

- 14-storey block of flats and penthouses
- Offices
- Atrium with mechanical extract of smoke
- Arts centre including main theatre with tilting floor, and studio theatre
- Barnett technical college
- Health and fitness suite and swimming pool
- M&S retail store and other retail units
- Bus depot
- 2-level basement car park with jet fans for smoke control
Some Tally Ho fire precautions

- 24/7-manned building control centre
- Life safety automatic sprinklers in most areas (excluding residential tower, swimming pool and fitness centre, theatres and basement car parks)
- AFD everywhere including certain ceiling voids but excluding communal parts of tower and M&S retail store. Individual flats have stand-alone AFD
- Mechanical smoke extract for theatre foyer (assuming growing design fire) and perhaps local parts of tower flats. One fire fighting shaft in tower; fire fighting stairs with wet risers elsewhere
- Fire dampers in ductwork where penetrating a compartment wall or floor, and smoke detectors upstream of AHU’s
- Phased evacuation (desirable but not essential)
- Generally 90 min fire resistance for structure and 30 min for MOE. 120 min for fire fighting shaft
- Mains fed (battery back-up) luminaires for emergency lighting
Tally Ho jet fan mounted under ceiling for car park smoke control
Crown Moran Hotel, Cricklewood. Glass atrium under construction
How does a consulting FSE get into BC work?

- Send letter to Chief BCO with couple of pages explaining your practice and how you can help
- Give lectures at seminars attended by BCO’s
- Get asked for advice by someone in BC office familiar with your work

- Note. It is not normal practice for BC authorities to use consultants, but this may happen when they are overloaded or when they do not have the expertise needed in-house
What does a consulting FSE have to learn for BC work?

• Building regulations and the approved documents (AD B) and knowledge of underlying principles.
• Fire codes and standards (BS 5588, BS 9999, BS 7974 etc) and contentious issues arising
• Knowledge of building contracts and how the design team operates
• The necessity to document all agreements and interim approvals, and copy all important docs to BCO
• Avoid causing a delay in the contract by withholding approvals as work progresses
• Ability to make reliable decisions at short notice, sometimes on site.
Learning continued

• Ability to justify the agreed fire safety strategy at a later date
• Ability to interpret 2-D drawings when there are complicated intercommunicating spaces where fire effluent could flow
• Need to keep client (BC) fully aware of decisions made and forewarning of potential problems
• Not getting involved in the FSE design, but identifying solutions to problems
• Not spending too much time on the job
Problems facing the consulting engineer working for BC

- Getting information from the architect and contractor
- Identifying generic materials e.g. plastics
- Approving ‘black box’ solutions to smoke control calculations submitted for approval
- Getting information on reasons for choice of design fire
- Delay in getting information indirectly
Problems …continued

- Keeping abreast of latest smoke control calculation methods – transient and steady state
- Storage of drawings and correspondence
- Fitting in commissioning tests at short notice
- Having access to latest codes and standards (BS and EN)
- Getting and interpreting ‘cause and effect’ schedules for fire detection and other systems and their interfaces
- Preventing cherry picking
- Keeping up with CPD
Interest of working in BC

• Contributing to the development of the FSE strategy for a large project
• Suggesting and agreeing Design Notes*
• Taking a proactive role in suggesting fire suppression under the theatre and suggesting aspirating smoke detection
• Commenting on the Landlord’s fire safety manual
• Opportunity to probe new technologies eg jet fans for basement car park ventilation**
Interests …cont’d

• Challenge of agreeing non-code compliant solutions
• Agreeing tenant conditions (eg M&S retail unit FD arrangements)
• Developing a rational for allowing non-sprinklered areas in a complex
• Agreeing phased evacuation methods and spreadsheet calculations
• Excitement of working on a large complex project
Interests …cont’d

- Getting FS consultant to submit FSE calculations in a transparent way (according to DD 240 or PD 7974)
- Seeing the latest construction methods in use
- Satisfaction of helping designer out of a problem
- Utilising the facilities of the British Library
- Enjoying a good relationship with BC client, confident in each others abilities
Crown Moran hotel.
Central vacuum pipework
Crown Moran hotel.
Typical fancoil unit
Crown Moran hotel. Typical fire damper above ceiling (ceiling panel removed)
Tally Ho theatre: dropped floor, seats stored mode. Fire in seat store has to be catered for.
Tally Ho theatre auditorium: floor in raked seat mode.
Tally Ho theatre auditorium: flat floor mode
Principle of aspirating smoke detection. This was used in Tally Ho theatre seat store.
Aspirating smoke detection was also used in St Paul’s cathedral.
Essential documents

- AD B to the Building Regulations (England and Wales)
- BS 5588 Fire precautions in the design, construction and use of buildings
- BS 5306 Fire extinguishing installations
- BS 5839 Fire detection and alarms
- BS 5266 Emergency lighting
- BS DD 240 and BS PD 7974 Fire safety engineering
- BR 186 Design principles for smoke ventilation in enclosed shopping centres
- BR 368 Design methodologies for smoke and heat exhaust ventilation
- CIBSE Guide E Fire engineering
The end