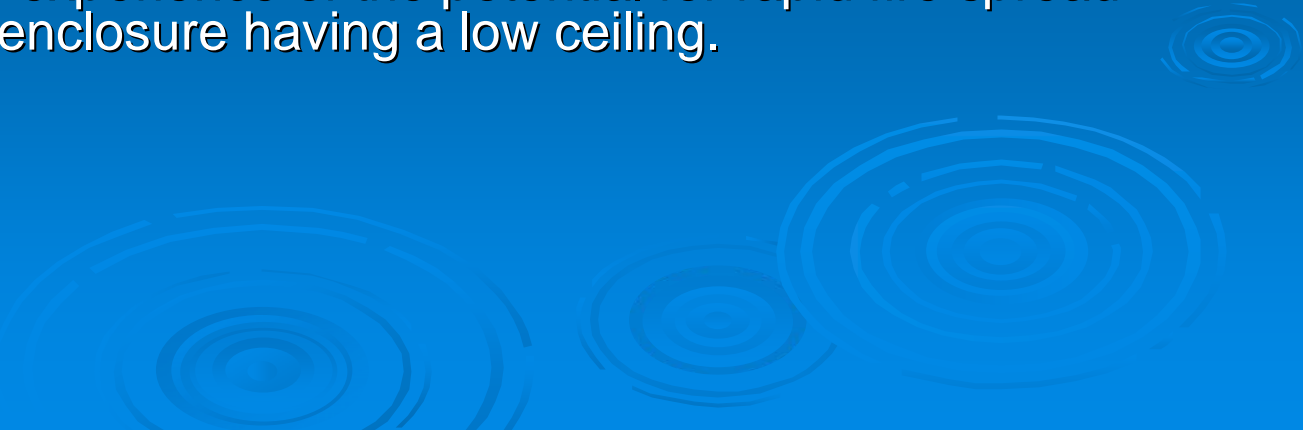
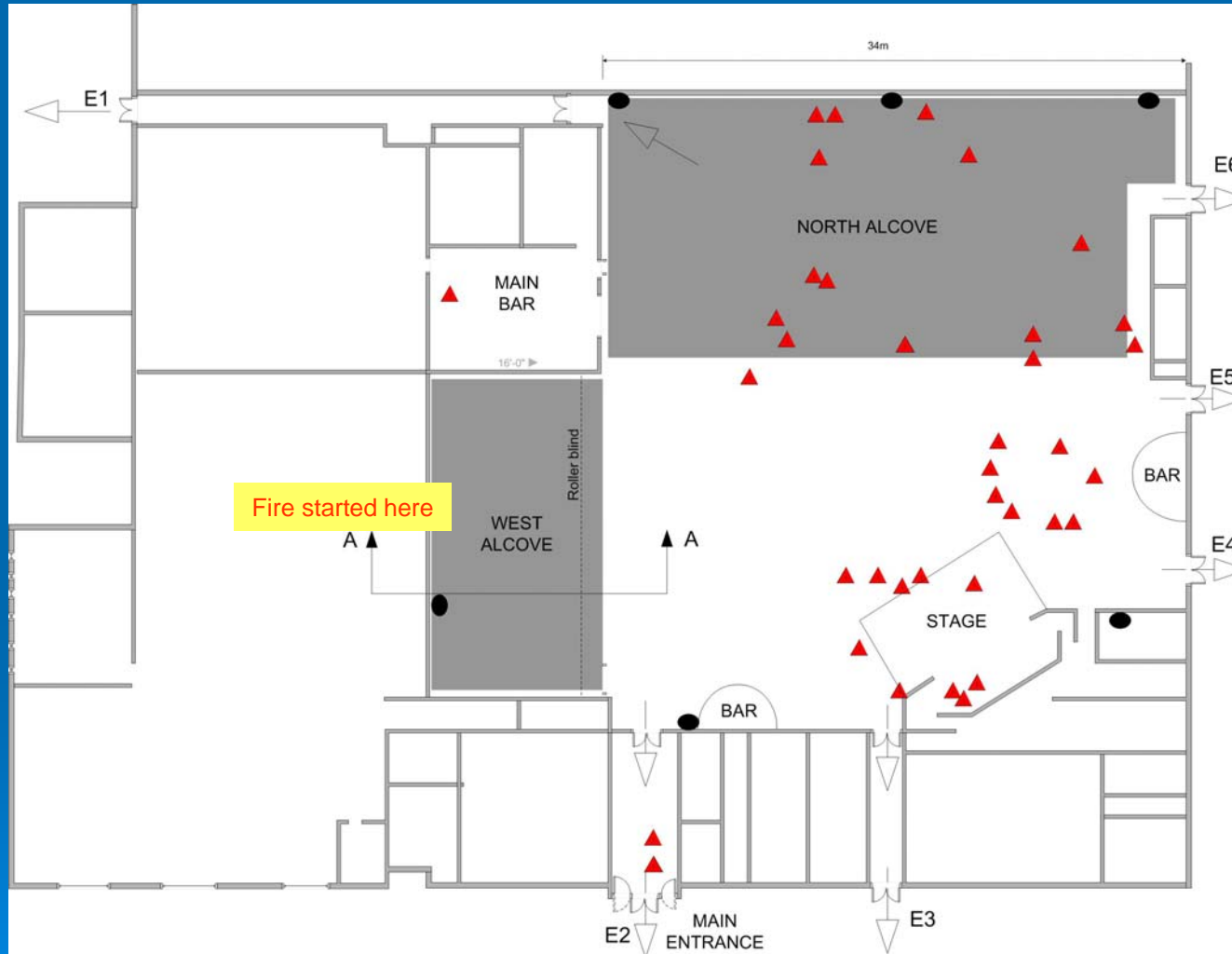


# Stardust disco, Dublin, February 1981

- A fire at the Stardust disco club in Dublin, Irish Republic, on 14 February 1981 claimed the lives of 48 people and seriously injured 128 people.
- Witness reports suggested that the occupants watched the fire with interest and made no efforts to leave, until, after a few minutes, flashover occurred and in the ensuing rush to escape there was not sufficient time to escape.
- This was another example (like Woolworth's) of people having no experience of the potential for rapid fire spread within an enclosure having a low ceiling.



# Stardust – building plan



Red triangles show positions of the dead bodies.

6 black-filled dots show positions of fire extinguishers

Final exits are indicated by E1 to E6

Fire started at back of West Alcove.



# Stardust – the building and services

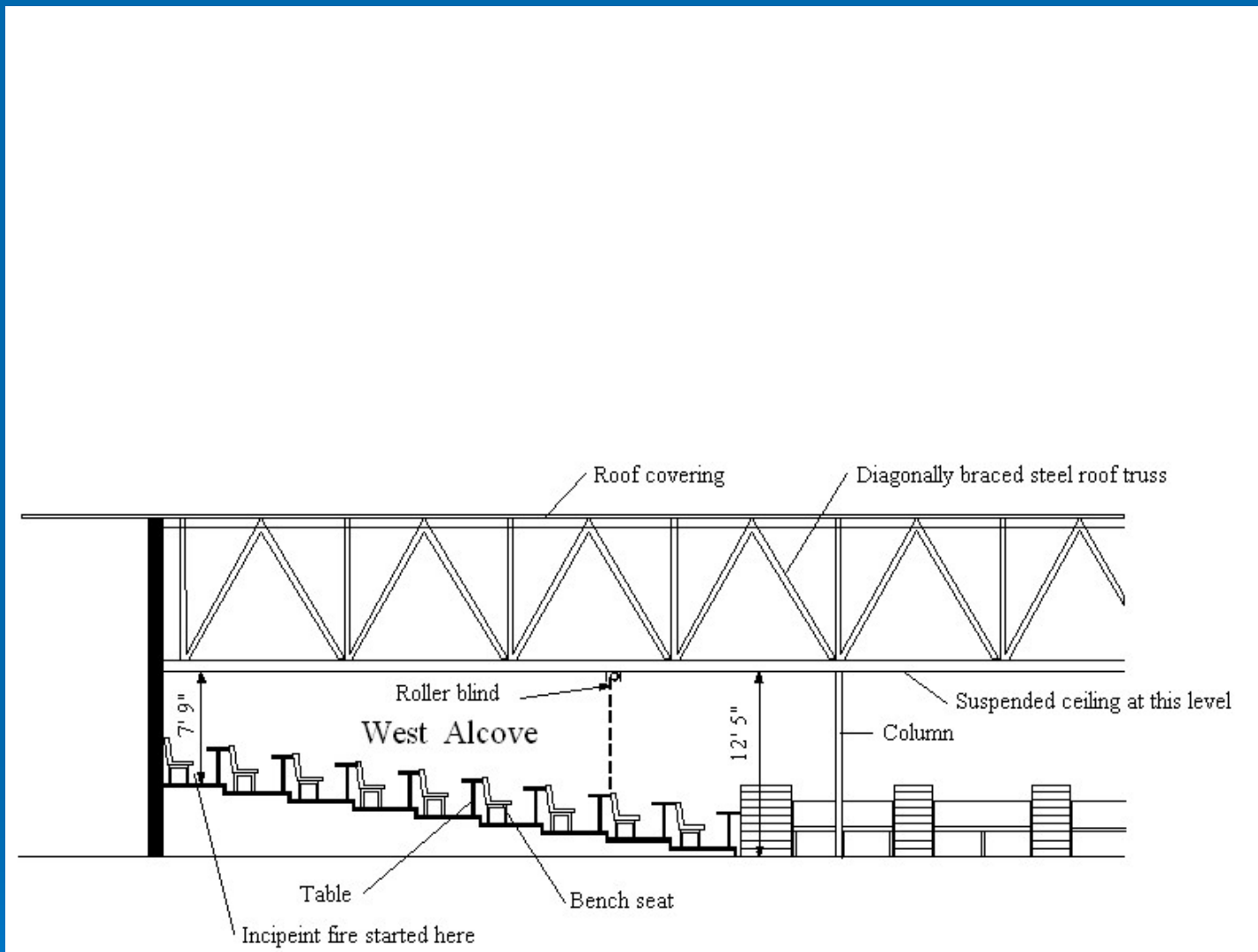
- The Stardust section of the building, including toilets and kitchen, occupied a floor area of 1853 m<sup>2</sup>.
- The building formed a corner site which was served by private hydrants in the forecourt and there were several hydrants in the adjoining road fed by a 150 mm diameter public water main, but the fire brigade did not know about the existence of the former and were uncertain as to the position of the latter.
- The ballroom was on the ground floor. The external walls were of concrete block work but they and the alcoves had been illegally lined with plastic floor carpet tiles.
- The roof was of steel trusses with asbestos cement sheeting on top with a suspended ceiling of mineral fibre tiles below. Floor to ceiling height was 3.8 m except at the back of the alcoves where it was only 2.3 m due to the sloping stepped floor.
- There were offices at first floor level but these did not feature in the fire.
- There were eight exits from the ballroom but only six were specifically for means of escape and these were theoretically capable of discharging 1750 people in 2.5 minutes



# Stardust – the building

- The legally permitted occupancy was 1458 people and on the night of the fire there were 850 people present.
- There were 11 manual alarms wired to a 6-zone visual indicator plan with a buzzer in the cloakroom beside the main entrance foyer.
- There were 7 fire extinguishers (not easily seen), and no hose reels.
- Emergency lighting comprised 40 down-lighters installed in the ballroom and internal escape routes, fed by a 110 V battery secondary power supply.
- There were two large alcoves; the West Alcove, where the fire started, and the larger North Alcove.
- The West Alcove had a roller blind of plastic which could be used to close off the alcove. This blind was in the down position at the time of the fire. The alcoves had bench type tables and fixed tiered seating upholstered on the seat and back with polyurethane foam covered with PVC fabric.
- There were also chairs and tables on the flat dance floor.





- Section through West Alcove showing ramped seating and low ceiling. Shows where fire started.



# Stardust – the fire

- It was St Valentine's night and approximately 850 people were present.
- The bar was closed at 01.00 hrs.
- The fire was first noticed in the bench seating behind the roller screen in the West Alcove at 01.35. The alarm was raised but people, perhaps as many as 200 to 300, stood watching the fire.
- The fire spread upwards and ignited the plastic wall tiles which dripped flaming molten droplets onto the seating below.
- Someone raised the roller curtain, flashover occurred in the alcove, the ceiling over the alcove collapsed, the lights failed, and panic followed as fire spread into the ballroom.



# Stardust – the fire

- It appeared that most occupants tried to leave through the main entrance but the doors temporarily jammed shut until pressure built up and the doors were forced open.
- Another exit was locked with a chain and padlock and another exit was partly obstructed by a builder's skip.
- Witnesses outside saw flames through the roof at 01.38
- BRE undertook a programme of fire tests which showed that, with high attendant radiation from the hot gas layer, flashover could occur very rapidly.



# Stardust – BRE full scale simulation



Fire on rear bench has spread laterally and involved the combustible wall tiles.

Note black smoke flowing under ceiling.

Water-cooled radiometers are on stands



# Stardust – BRE final simulation



The point of flashover.

Note smoking of tops of bench seats. These are near the point of autoignition due to radiation from hot gas layer.

Video is available from BRE



# Stardust - observations

- The ballroom was fortunately not at full capacity at the time of the fire
- Flammable floor carpet tiles had been illegally adhered to the walls of the alcove in which the fire started and they contributed to the rapid onset of flashover
- The fire started in an area where the ceiling was low and this encouraged high levels of radiation from the hot gas layer to be fed back onto the seating below encouraging early flashover.
- The polyurethane foam upholstered bench type seating, although combustible, was said not to be responsible for the rapid fire spread.



# Stardust - observations

- People were interested in watching the fire develop rather than making their escape, and appeared unaware of the speed with which fire could develop in a confined space.
- The emergency lighting failed at about the same time that flashover occurred.
- Some exits were not available because doors were locked for security reasons or obstructed.
- The local authority fire service were understaffed and had not been able to inspect the site and so were unaware of the fire hazards in the building and the positions of some hydrants.

