MAX FORDHAM

GRENFELL TOWER **25 OCT 2013**

SMOKE CONTROL PROPOSALS

Lift Lobbies on Residential Floors

Existing System

The system comprises a fresh air shaft and a smoke extract shaft serving all the lift lobbies in the residential levels of the building. The system is designed to work as a natural ventilation system, but supply and extract fans are also installed to enable the Fire Brigade to provide additional mechanical ventilation if they consider that to be advantageous in dispersing smoke.

Each lift lobby has a fresh air inlet at low level on one side of the lobby and a smoke exhaust vent on the opposite wall of the lobby at high level. The vents connect directly into the fresh air shaft and the smoke extract shaft respectively.

Each vent has a remote operated damper which is normally closed.

There is a smoke detector in each lobby. In the event of a fire in any of the lobbies, the smoke vent dampers and the fresh air dampers serving that particular lobby open. The dampers on all other levels remain closed.

A fireman's switch at ground level gives the Fire Brigade the choice of using mechanical ventilation.

Proposed System

It is proposed to install a new ventilation system which will primarily be for fire safety and smoke control, but which will also provide some ventilation to reduce the possibility of the lobbies becoming uncomfortably warm due to heat emission from the heating pipes running through the lobbies.

The current system is around 40 years old and over the years has had some of the original parts replaced with different components. The proposed system will provide new supply and extract fans as well as consistent new components on all floors and should prove significantly more reliable in operation and be easier to maintain than the current system. It will also make routine testing simpler and easier to carry out.

Smoke Control

As the existing installation was designed and installed approximately 40 years ago, it is not possible to adapt the existing system to comply with current standards. Given the physical constraints of the existing building, the design approach has therefore been to upgrade the existing system to as high a standard as possible.

It is proposed that the new system will be a mechanical supply and extract system which does not rely on natural ventilation as the performance of a naturally ventilated system would be difficult to model and verify. As there are no directly applicable standards which can be referred to, it is considered that it would be reasonable to design the system to provide an air-change rate of approximately 15 air-changes/hour.

The existing fresh air shafts and smoke extract shafts will be reused.

New motorised dampers will be fitted to all fresh air and smoke extract vents.

New fresh air supply and smoke extract fans will be provided.

New smoke detectors will be fitted in the lobbies.

MAX FORDHAM

A new fire panel will be installed on the ground floor.

On detection of smoke within any lift lobby served by the smoke control system, the fresh air and smoke dampers serving that particular lobby would open fully and the supply and extract fans would operate. The fresh air and smoke dampers on all other levels would all be closed.

The fire panel would have a ventilation selector switch which would enable the Fire brigade to control the supply and extract fans.

Dual power supplies would provide normal/stand-by power from different sources to the fans and to the fire panel.

Temperature Control

As part of the refurbishment of the building, new heating mains serving the residential areas are being installed. These will rise through the building within the lift lobbies with branches to the flats at each level. These heating mains will be relatively large and even with a high standard of insulation, they will emit a significant amount of heat into the lobbies.

This has caused considerable problems on other projects and it is considered essential for this project that provision is made to provide adequate venting.

Normally, comfort ventilation would be kept separate from smoke ventilation. However, for this project where the lobbies are land-locked, there are few, if any, options available apart from using the smoke vent system.

It is therefore proposed that under normal conditions the fresh air and smoke dampers are kept open. Temperature sensors located within a few 'typical' lobbies would operate the fans if the temperature in any of these lobbies rose to an uncomfortable level. Conversely, the temperature sensors would also close the dampers if on very cold days the lobby temperature dropped below a pre-set level.

In the event of smoke being detected within any lift lobby served by the smoke control system, the fresh air and smoke dampers serving that particular lobby would remain open and the supply and extract fans would operate. The fresh air and smoke dampers on all other levels would all be closed. The system would be set up such that it was 'fail-safe' with priority always being given to the fire safety operation.