

**ADDENBROOKE'S NHS TRUST  
ESTATES & FACILITIES MANAGEMENT**

"Committed to Providing a Safe and Effective High Quality  
Environment for the Delivery of Healthcare"

**ESTATES DOCUMENT**

**"STANDARDS FOR CONTRACTORS"**

**FIRE ALARM SYSTEM**

**Version 1: 2007**

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## Fire Alarm System

**All work on the fire alarm system including commissioning shall be carried out in accordance with BS5839, HTM Firecode documents and manufacturers recommendations.**

### 1. System of operations

- 1.1 The installed fire alarm system is to be an "L1" system across the Trust.
- 1.2 The system of operation shall be as the Gent 34000/Vigilon and shall be generally as follows:
- 1.3 On operation of any break glass or automatic detector the sounders shall sound intermittently, Door closers shall release as per zone/floor configuration.
- 1.4 Evacuation shall be via the separate evacuation switches at both ends of the ward/floor and with a back up facility in the 1155 room and operation shall result in the continuous operation of the sounders from any of these locations, as per fire alarm/zones configuration.
- 1.5 In areas where patients can escape unaided and in non-patient access areas, the audibility of the alarm should be in accordance with BS 5839-1
- 1.6 Audible alarm devices should be provided in all areas of the premises. There should be careful siting of alarm devices so as to warn staff without undue disturbance to patients. To achieve this, the audibility of the general alarm in areas where patients require assistance to evacuate need only be typically in the range 45-55dB(A), or 5 dB(A) above the notional noise level, whichever is greater. As far as possible, sound pressure levels in excess of this should be avoided.
- 1.7 It is preferable that a large number of quieter sounders, rather than a few very loud sounders, be used to prevent noise levels in some areas becoming too loud.
- 1.8 Visual alarm devices may be provided as an alternative to alarm sounders in areas where an audible alarm is unacceptable, for example very high dependency patient access areas, such as operating theatres, ITU and special care baby units. Visual alarm devices should comprise flashing lights, preferably red, and should normally incorporate a sounder of low sound output (example 50 dB (A) at 1m) which should be similar in output to that of the main alarm devices. Consideration should be given to the potential for adverse reaction to flashing lights by those with photo-sensitivity in any case should not exceed 130 flashes a minute. It is a Trust requirement that visual alarm devices should be installed as well as audible devices in areas where public have access without staff management facilities in place i.e. public toilets, waiting areas and concourse areas, this is to assist with persons that have hearing difficulties.

1.9 It may not always be necessary to actuate ancillary services when the fire alarm system operates, when incorporating fire strategy, and risk assessment for the location. For instance, electronic locks securing exit doors may not be released automatically if a manual means of override is present by the door. Similarly, whilst it may be prudent to return passenger lifts to the ground floor and disable them this would not be appropriate for escape or fire mans lifts. It is important, therefore, that the need for actuation of ancillary services is established of the local and overall fire strategy within the trust as well as statutory consultation

## **2. Cabling**

2.1 The fire alarm loop cabling for detectors etc. shall be red 2-core 1.5mm MICC LSF cable or ENHANCED FIRETUF OHLS Cable type: FTZ2E1.5 and FTZ4E1.5 cable.

2.2 MICC/Fire-Tuf cable shall be clipped to the soffit at intervals of no greater than 300mm apart using round headed screws or installed on heavy duty galvanised steel cable tray as detailed in the particular specification.

2.3 All cabling to devices shall be suitably labelled L1, (-) by suitable cable numbering sleeves.

2.4 The manual call points shall be flush mounted (where possible)with the cable run down the wall in 20mm flush conduit from above the ceiling to 1200mm from floor level.

2.5 All detectors shall be fixed to the soffit by a top entry conduit box secured to the soffit.

2.6 Electrical supplies to any item of fire alarm equipment shall be wired on a separate circuit in appropriate cable as stated in 2.1.

## **3. Supply and Extract Fans**

3.1 The supply and extract fans will not be automatically switched off by the operation of the fire alarm system. A Fireman's panel shall be present at the entrance to the department/ward to enable manual operation of the fans.

## **4. Dampers**

4.1 All fire doors should **NOT** have ventilation grills fitted; appropriate mechanical ventilation provision should be in place. However if this is not practicable fire doors requiring Air Transfer Grilles are to be of the Lorient self testing smoke/heat shutter grilles type. The main control unit is to be linked utilising volt free contacts to the Trust Andover Controls BMS System. The Lorient main control unit (Talkback) is also to be linked with the Trust fire alarm system such that on activation of the fire alarm system via a device upon side of the door, the damper will shut.

4.2 All fire compartment walls i.e. main, sub & Hazard compartments (60 & 30 minutes) in all risk areas are to be protected by electrical self testing dampers operated by the fire alarm system only. The following criteria for the control of the compartment electrical dampers by the fire alarm system are to be applied:

1. The activation of the dampers will be from a double knock situation (two devices) within the main compartment or adjacent compartment without delay. Otherwise additional operation will be through the damper ventilation/Fireman's panel - See Section 5.
2. Adjacent Main Compartments shall include Compartments which are adjacent in terms of the layout of the ventilation system as well as the physical building compartmentation i.e. any ductwork route between areas and other Main Compartments.
3. For any Escape Route adjacent to the Main Compartment the fire alarm system shall shut the dampers on activation of a fire alarm double knock (two devices), with no time delay.
4. If any situations arise not specified in items 1 – 3 consultation must be made by Addenbrookes Hospital and the Cambridge Fire Authority to decide upon the appropriate action i.e. High clinical ventilation areas i.e. theatres, ICU's

4.3 Access panels to all fire dampers are required; this is for ease of servicing/maintenance or operation/resetting requirements, so there needs to be adequate provision of access to and around the damper itself.

## **5. Fireman's Panel**

5.1 The fireman's panel shall be located at the entrance to the ward/department at a location agreed by Addenbrookes Hospital. The fireman's panel will be a single, flush mounted panel containing all switches as per the requirements of this document. The panel will also be clearly labelled "FIREMAN'S VENTILATION PANEL. TO BE OPERATED BY FIREMAN OR ADDENBROOKES HOSPITAL SHIFT TECHNICIAN". It will be secured by a glass fronted door panel with a lock see below:

**Panel:** Legrand Atlantic steel wall mounted enclosure Ral 7032, with tempered glass window.

**Lock:** Suited cam lock – single lock with 2 x 2433 A Keys

**Fitting:** To be flush installed at agreed height all as specified in main building contract specification

5.2 Each individual Supply and Extract fan will have a fully operational rotary override switch with AUTO, OFF, ON positions and be clearly labelled as to which fan it controls.

5.3 The Dampers will have a fully operational rotary override switch with AUTO, CLOSED, OPEN positions and be clearly labelled as "FIRE DAMPER OVERRIDE".

5.4 All switches within the fireman's panel will operate an audible alarm and red light within the panel when any switch is not in the auto position.

## 6. Sprinkler configuration

6.1 Sprinkler in chute rooms

6.2 The control of a sprinkler system within chute rooms shall be as follows: -

The chute room shall have 2no smoke devices installed within the chute room

- 1no ionisation detector
- 1no optical detector

On operation of 1no device in the chute room the sounders in the relevant zone shall operate. On operation of the 2nd device (double knock) the sprinkler shall operate.

6.3 The sprinkler shall be powered via a 24vdc charger (battery backed up) and mains powered interface fed from an essential electrical supply. The sprinkler shall operate with power on the coil. The sprinkler cabling and coil shall be monitored for open circuit by the interface.

6.4 A keyswitch shall be installed so that for maintenance purposes (testing) the sprinkler can be operated without the need for entering the chute room to enable the smoke detectors. The key shall be located in a break glass adjacent the interface panel and a key kept in the maintenance department.

## 7. Permits to Work

7.1 Permits to work are required to be in place before any works that require a permit can start, i.e. Ventilation shutdown works and hot works etc. "Standards for contractors" General information supports further information on this issue.

7.2 Hot Work permit – Hot work activities will require authorisation through the permit to work system as detailed in Fire Safety – Estates & Facilities policy. It should be noted that the Hot Work Permit as detailed in the document "Standard Fire Precautions for Contractors" must not be used. Any permit should be authorised / filled out in the location of works and sufficient checks on the equipment made to make sure they meet the current safety standards i.e. BOC Gases recommendations for use etc.

7.3 Any permits issued are to **ONLY** be in place for a maximum of one 24Hr period at anytime.

7.4 At the end of the hot works the fire watcher is to do an immediate check of the area, this is then to be repeated again after 30 minutes before the area/site is left by the fire watcher. They are then required to inform the issuer of the permit that all is clear and permit is closed.

## **8. Labelling**

8.1 The ESC shall allow for the Addenbrookes Hospital Supervising Officer to provide names for each room and for these names to be incorporated into the fire alarm system to identify the location of any fire. Each label is to include BU Number, Room Number and a description.

## **9. Access Control Systems**

9.1 Any access control system door lock mechanism controlling the operation of doors shall be individually "hard wire" interlinked with the fire alarm system so as to ensure that the door becomes un-locked upon the operation of the fire alarm evacuation signal for that area. Failure of the door control system must not prevent the unlocking of doors by the fire alarm system.

## **10. Commissioning**

10.1 The ESC shall also allow for an electrician to be in attendance during the commissioning period. The Commissioning company shall be that stated in the particular specification for the project and shall at all times a Gent authorised commissioning engineer. The ESC shall allow for an as fitted drawing at commissioning stages.