Design Guidelines

Fire Safety in New and Refurbished Buildings

Introduction

All major new or refurbishment projects must comply with the Technical Standards (Scotland) Regulations as a matter of course. There are however, a number of areas where the University wishes to make provisions above and beyond the minimum requirements in the Technical Standards or make additional improvements to existing buildings where upgrades to meet the Standards are not strictly required as part of a Building Warrant application (e.g. situations where the status quo is deemed to comply).

These improved provisions are normally required to comply with Risk Assessments carried out by the University Fire Safety Adviser as required under the Fire (Scotland) Regulations 2006

It will be necessary on every new build or major replacement project to meet with the University Fire Safety Adviser and a representative from Estates and Buildings to review existing fire risk assessments and/or agree any provisions that go beyond the requirements of the Technical Standards.

The guidelines listed in this document provide guidance on existing fire strategies and lists typical areas for consideration.

Plan Drawings

Plan drawings covering the layout of the building, compartmentation and intended fire warning system schematics should be submitted for comment at the earliest opportunity.

Considerations for Means of Escape

- Dead end conditions existing on plan or in buildings should be considered as this may reflect on the fire safety measures required to protect the occupiers of these areas. It may include upgrading, to a suitable resistance, walls, door, glazing etc or may have an influence on the category of fire warning system required.

- Provision of smoke stopping doors in corridors to reduce the spread of combustion products is generally met by the Technical Standards; however, in some circumstances do not always provide the practical solution.

- In some cases, large rooms, i.e. seminar or lecture rooms where occupant capacity exceeds 60 persons, should be considered for alternative means of escape where technical standard applied is “angle

of divergence" and thus does not provide a practical solution because of distance to final exit or discharge into one inappropriate route on corridor.

- Where final exit from a building is via an external route the route should be constructed of non-slippery hard standing and illuminated throughout its length.

- Where final exit from a building is via and external staircase the staircase should be afforded appropriate fire protection to allow the occupier to use the staircase in event of fire. The staircase should also be illuminated throughout its length.

- Protected lobbies onto staircases are required in certain circumstances by the Technical Standards; however, there may be other occasions when it may be appropriate to consider such lobbies, in single staircase conditions when no provision is required, or to assist with disabled evacuation procedures, or afford protection to lifts, or reference to number of storeys. This may also have an influence on the category of fire warning system required.

- Where rooms do not open directly onto a corridor or escape route (e.g. room accessed from another room). Ironmongery fitted to doors should not be of a type whereby occupiers can be inadvertently locked in the rooms. Doors should be easily and immediately openable from the inside without the use of keys e.g. turnbuckle. There will be circumstances where security is an issue and this should also be considered independently but not be a hindrance to escape in event of fire.

- Self-closing devices fitted to doors should not be of a type that will permit occupiers of buildings to tamper with the devices thus rendering them ineffective. Self closers should also be delayed action type in all circulation areas to improve disabled access.

- Places of public assembly should have push bar to open mechanisms on emergency exit doors. Push pads are only permitted on staff area doors.

Passive Fire Protection (P.F.P.)

- Fire separation within a compartment should be considered and the following direction recommended if considered necessary. This may also have an influence on the category of fire warning system required

- Corridor walls should be continuous from floor to structural soffit. If construction involves 'flexible partitioning' then cavity barriers or fire curtains should follow the line of the corridor walls.

- Subdivision of the ceiling and floor voids by fire curtain should be considered.

- All Services penetrations including power cable or data cable penetration through corridor and compartment walls or floors should be suitably fire stopped with appropriate materials on both sides of the wall or floor.

- The booklet “Ensuring Best Practice for Passive Fire Protection in Buildings” should be referred to for guidance on all items concerning P.F.P.

Provision for the Disabled

- Consideration should be given to including the designation of specific temporary waiting areas in buildings which will allow disabled people to use and be evacuated from University Buildings whether or not this is a requirement as part of the Building Warrant.

- Deaf Alerter should be installed.

- Consideration should be given to the provision of a fixed communication system and its location with regard to temporary waiting areas for disabled people and appropriate communication panels next to the fire alarm panel.

- In multi-storey buildings provision of appropriate lifts that will permit disabled person evacuation in event of fire should be considered.

- All the above items will have an influence on the category of fire warning system required.

Automatic Fire Detection and Fire Warning System

Categories of Fire Alarm installation are defined in British Standard 5839 Part1: 2002.

In determining which category should be employed three main factors must be considered.

- The protection of Life
- The protection of property
- The protection of business against interruption to its operation.

These three factors form the essential part of the Risk Assessment process and to ensure compliance the following items must be considered in determining the category of alarm system required.

- Use of the building
- Means of Escape

- Procedures for disabled persons
- Construction of the building
- Fire compartmentation
- Fire separation within the compartment
- Passive fire resistance
- Residual Hazards or Fire Risks within the building
- Special provisions required for protection of equipment
- Special provisions for the protection of heritage, listed buildings etc
- Management of the building and working practices.
- Site specific evacuation procedures

After consideration of the factors and items indicated above the category of fire Alarm for installation in the building will be confirmed. As an example residencies would always have a category minimum of L2 whereas other University buildings could fall into any of the other categories specified in BS 5839:Part1; 2002

Other points for consideration

1. Whether full or phased evacuation required.

2. Additional requirements of Fire Alarm panel.

3. Requirements for plant, ventilation, lift etc.

4. Limitation of false alarms.

5. Additional requirements for disabled persons. e.g. communication device, no sounders in temporary waiting areas or near fire and communication panels.

6. Provision of a telephone adjacent to Fire alarm panel

7. Location and use of magnetic devices

Strobe or beacons should be considered as an addition or replacement for sounders in the following locations: --

i. Large Seminar Rooms

ii. Lecture Rooms

iii. All Toilets

iv. Plant and Machinery Rooms

v. Places of Public Assembly

vi. Libraries

vii. Theatre Auditoriums

viii. Staircases used as temporary waiting areas for disabled persons

Before acceptance of the installed alarm system the appropriate certification for design, installation, commissioning and acceptance must be provided together with the documentation as required by the British Standard.

Commissioning

During the commissioning process all system must be demonstrated and accepted by Estates and the FSU. The occupiers should also be instructed in the daily and weekly testing regimes and appropriate certificates produced.

General

The provision of all fire exit signage luminous units or pictorial signs should be considered. Storey or final exits should always be illuminated.

Emergency lighting must always be provided. The standard being: Maintained in Places of general assembly and residencies: Non Maintained in other areas

The provision of all firefighting equipment should be considered and probable costs estimated.