



**ARCHITECTURAL (FIRE) DESIGN NOTES - NEW PROJECTS & REFURBISHMENTS**



What both the Principal Designer & Principal Contractor need to know:

 <b>Mandatory</b>	<p><b>Mandatory</b> - UCL 'the Client' requires that design teams comply with the <b>Regulatory Reform (Fire Safety) Order 2005</b>. Specifically, the protection of UCL staff, students and visitors by providing suitable and effective control measures to mitigate the impact of fire from their design.</p>
	<p><b>Mandatory</b> - UCL 'the Client' requires that the fire strategy and design shall reflect ease of fire and safety management (<i>see British Standard 9999 - Part 6: Sect 27</i>). <b>Unacceptable</b> - to introduce complex or inappropriate measures to the design for the sake of aesthetics or convenience that requires fire safety management controls, on occupation by UCL.</p>
	<p><b>Mandatory</b> - the fire strategy (where required) for the new buildings / projects must be a 'dynamic document' to reflect alterations and changes to the design of the building throughout construction, to practical completion and occupation by UCL. Design team <b>fire engineering services need to monitor and update strategy to reflect design to practical completion</b> - <u>not just</u> for Building Regulations Approval.</p>
 <b>Prohibited</b>	<p><b>Mandatory</b> - UCL 'the Client' requires that <b>all elements</b> of external cladding system (primarily insulation materials, membranes, boards and rails used for structural support and rainscreen panels) <b>are non-combustible (except those elements that are specifically excluded from this requirement in Approved Document B, such as filler, gaskets, etc.)</b>.</p>
	<p><b>Prohibited</b> - to introduce complex or inappropriate measures to the building design for aesthetics or convenience, which require fire safety management controls on occupation by UCL to compensate for building design issues.</p>
 <b>Acceptable</b>	<p>It is recommended that both the design and general fire strategy be discussed at design RIBA <b>Stages 2 / 3 / 4</b> with the UCL Fire Safety Team and Fire and Rescue Authority and Building Control Officers as appropriate. This is to ensure that design concept will not present problems at handover, affecting project completion.</p> <p><b>Design &amp; Build Contracts</b> - it is recommended that both the design and general fire strategy be discussed &amp; reviewed at design RIBA <b>Stage 4 (D)</b> with the <u>Principal Contractor and their design team</u> to check understanding and assumptions prior to construction phase.</p>

**Note** - UCL Employers' Requirements see UCL Fire Safety Technical Notes available at: [www.ucl.ac.uk/fire](http://www.ucl.ac.uk/fire) - see employers-requirements table

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## 1.0. Cladding Systems - Design and Specification

1.1. **External Cladding Systems** - UCL the Client requires all external cladding systems and all elements of the cladding system (*including render materials, insulation materials and any rain-screen cladding, but not including elements such as gaskets, sealants and similar*) are **non-combustible (or, as a minimum, materials of limited combustibility) and achieve European classification of Class A1 or A2** - regardless of:

- the property being under 18m in height;
- the property being non-sleeping accommodation;

1.2. As good practice, facades with fire barriers shall:

- provided fire barriers / stopping around **three sides** (over and each side of the opening) of windows;
- provide fire barriers at floor level at all levels (compartment floors) and in line with all internal compartment walls within the external façade);
- provide fire barriers / stopping of all penetrations passing through the facade including kitchen and bathroom extraction vents, to be fire-rated to FR60 including dampers, where necessary;

1.3. Any proposal that varies from this requirement will not be considered as appropriate without express consultation and agreement with the UCL Fire Safety Manager.

1.4 **The Building (Amendment) Regulations 2018 (Statutory Instrument 2018-1230)**

**Note** - the building regulation were amended with effect **21 Dec 18** with respect to Sleeping Accommodation with occupied floors greater than 18m shall have none-combustible external wall materials and cladding meeting A1 / A2 in construction and installation.

## 2.0. Architectural Design Notes

### 2.1. Fire Compartmentation

Areas that require fire-resisting construction in addition to Approved Document B Building Regulations:

- **Places of Special Fire Hazard\*:**

\*Note this defines a very narrow list of space which it regards as special fire hazards (*oil filled transformers & switch gear rooms, boiler rooms, storage space for fuel or other highly flammable substances and rooms housing a fixed internal combustion engines*) that require enclosing in fire resisting construction;

- **Laboratories:**

The fire hazards encountered in laboratories and their associated ancillary accommodation are generally low to moderate (*e.g. tissue culture*) in view of the relatively small quantities of hazardous materials involved. However, some facilities may present significant fire hazards (*e.g. organic chemistry*), such as those where large quantities of flammable or reactive chemicals are used or where uncontrolled ignition sources are present. It is therefore important that the risk is assessed in each case, considering the following:

- quantities of flammable or reactive materials present;
- inherent risk in the processes carried out in individual laboratories; and,
- ignition sources present in individual laboratories;

- **Laboratories** - are classified an **'area of high fire risk'** so that laboratories **shall be** designed to meet a minimum of 30 minutes fire resistance (FR30) and any doors have a fire and smoke-resistance of not less than 30 minutes (FD30S) and Class 0 surface spread to wall and ceiling surfaces;
- **Laboratories** - any door leading from a laboratory directly onto stairs forming part of the means of escape, shall be avoided (*where unavoidable the door shall be lobbied to the stair by **two sets of fire doors meeting FD30(S)SC forming an FR60 lobby***);

- **Inner Rooms**

In accordance with section 3.10 of Approved Document B, 'a room from which the only escape route is through another room is called an inner room' and is at risk if a fire starts in the other room, called the access room'. Such an arrangement is only acceptable if the following conditions are satisfied:

- the occupant capacity of the inner room does not exceed 60;
- the inner room is not be a bedroom;
- the inner room is directly off the access room (but not via a corridor);
- the escape route from the inner room does not pass through more than one access room;
- the travel distance from any point in the inner room to the exits from the access room does not exceed the maximum travel distance (*12m across the room and further 6m to a change of direction*);
- The access room should not be a place of special fire hazard and should be in the control of the same occupier; and one of the following arrangements should be made:
  - the enclosures (walls or partitions) of the inner room should be stopped at least 500 mm below the ceiling; or,
  - a suitably sited vision panel not less than 0.1m<sup>2</sup> should be located in the door or walls of the inner room, to enable occupants of the inner room to see if a fire has started in the outer room (although this protection measure is extremely undesirable unless workstations are arranged to look at the vision panel, which is likely to be restrictive); or,
  - the access room should be fitted with a suitable automatic smoke detection (optical) or multi-sensor initiating an immediate alert in the inner room to warn the occupants of the inner room of the outbreak of a fire in the access room;

### 2.3. Fire / Final Exits

UCL Employers' Requirements on final exit doors set out in *UCL Fire Safety Technical Note TN005* the following areas are often omitted or ignored and should be addressed:

- **sliding and revolving doors shall not be fitted to final fire exits** and shall be avoided in your design;

- Sliding doors may be acceptable if no other option is available, only if adequately sized pass (non-sliding) conventional doors, opening in the direction of escape and are fitted with appropriate escape furniture;
- final exits shall (where practical) open in direction of escape and fire door signage for all door leafs and on glazed fire door manifestation is provided as set out in TN013;

#### 2.4. Fire Doors

UCL Employers' Requirements on fire doors set out in *UCL Fire Safety Technical Note TN013* the following areas are often omitted or ignored and should be addressed:

- all fire door ½ leafs **shall** be fitted with a self-closing device;
- all fire door cold smoke seals **shall** be brush type and not rubber blades;
- fire door signage for all door leafs and on glazed fire door manifestation is set out in TN013;

#### 2.5. Statutory Fire Signage

UCL Employers' Requirements on statutory fire signage is set out in *UCL Fire Safety Technical Note TN090*. The following areas are often problematic due to being omitted or ignored and need to be addressed:

- Refurbishment of buildings/areas - **all existing** statutory and fire signs **shall** be removed by contractors before walls are repainted - new fire signage, as appropriate, will in all cases then be reinstated;

#### 2.6. Fire Plans and Drawings

- **Fire Strategy Drawings** - shall provide information on Means of Escape (MoE) and travel distances to escape routes / inner room arrangements;
- **Fire Strategy Drawings** - shall provide information on project fire compartmentation, appropriate Fire Resistance (30, 60 or 120 minutes) and separation of building structures, indicating fire walls, fire doors fire shutters / curtains and their fire rating, ting, signage the floors and general layouts; (*i.e. location of fire separating elements, including cavity barriers in walk-in spaces*);
- **Fire Doors** - fire doors, self-closing fire doors and other doors equipped with relevant hardware;
- **Safety Signage** - indicate fire signage;

- **Firefighting Equipment** - indicate dry or wet risers / dropping mains and other firefighting equipment and location of hydrants outside the building;
- **Disabled People** - any provisions incorporated into the building to facilitate the evacuation of disabled people, disabled refuge (temporary waiting) positions;
- **Fire Strategy** - 'As-Built' latest version of project and any associated fire plans;
- Any other relevant information.

### 3.0. Further Information Consultation

Please consult with **UCL Fire Safety Manager** ([fire@ucl.ac.uk](mailto:fire@ucl.ac.uk)) as soon as practical to ensure:

- **UCL Client** design team - at **RIBA Stage 2/3**;
- Principal Designer and Contractor design team - at **RIBA Stage 4**;
- **Appendix** - attached is a copy of a fire plans (demonstration only as good practice):