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To : Authorized Persons
Registered F.S.I. Contractors
Registered Ventilation Contractors
Registered Lift & Escalator Contractors
Fire Insurance Association of H.K.
The Association of Registered F.S.I.
Contractors of Hong Kong
Structural Division, H.K.I.E.
Power Companies

The H.K. & China Gas Co.
The Lift & Escalator Contractors
Association
Pacific Century CyberWorks Limited
Hong Kong Construction Association
Director of Architectural Services
Director of Buildings
Director of Housing
Petroleum Companies

Dear Sirs,

FSD Circular Letter No. 4/2001
Part I: Visual Fire Alarm System
II: Time Related System
III: Water Mist System

This Circular Letter announces the revised standard for Visual Fire Alarm System as well as the acceptance of use of Time Related System and Water Mist System, details of which are set out in Parts I, II and III, respectively.

FSD recognizes the need to continually review active fire protection measures to take account of the following factors: changes in building designs and the building code, advance in modern fire technologies, cost-effectiveness of provisions, compliance problems, new fire safety concepts and standards, etc. As an on-going exercise FSD has initially identified five issues for review. After consultation with the trade and concerned professional bodies through circulation of information papers and meetings, decisions have been taken on the three captioned subjects now promulgated in this Circular Letter.

Regarding the remainder two issues, i.e. "Replacement of Fire Offices' Committee Rules 12th Edition on Fire Detection System by LPC Rules" and "Actuating Device for Smoke Extraction System", further study has to be conducted before final decisions can be made.

Yours faithfully,

(LAU Kwai-shan)
for Director of Fire Services

Encl.

PART I
Visual Fire Alarm System (VFA) under
The Design Manual : Barrier Free Access 1997

Circular Letter No. 10/97 and 5/99 issued on 29 August 1997 and 1 September 1999 respectively are to be destroyed and replaced with immediate effect by Part I of this Circular Letter. The important changes are set out below for easy reference:

- (i) VFA provisions stipulated in Clause 9.7 of BS5839: Part 1:1988 shall be accepted alongside the existing NFPA 72; and
- (ii) AC supply for VFA, and secondary supply from emergency generators or electricity obtained before main switch are also accepted.

2. In accordance with Paragraph 5.3 of the Design Manual: Barrier Free Access 1997 published by the Buildings Department, in buildings intended to be used by the public, VFA shall be provided to form part of the fire alarm system. This requirement is applicable to all newly constructed or substantially altered buildings, for which the first submission of building plans is received by this Department on or after 20 September 1997.

3. The installation of VFA systems shall conform to either:

- (i) Section 4.4 NFPA 72:National Fire Alarm Code with red flashing lights. There is no change to this existing standard, which was agreed during a consultation meeting held on 28.7.1997 between this Department and other concerned parties; or
- (ii) Clause 9.7 of BS5839: Part 1:1988. The reasons for introducing this standard are threefold. First, since the provisions are considered functional and effective in alerting people with hearing impairment, the existing safety standard would not be compromised. Second, by comparison with NFPA 72, the provisions may incur less difficulties and costs in compliance. Lastly, the entire provisions of fire detection systems have been based on the British Standard.

4. The criteria to be satisfied during acceptance tests of VFA systems are detailed below:

- i) All VFA shall be labeled “FIRE ALARM 火警” with height of English and Chinese characters not less than 10mm and 15mm, respectively;
- ii) In addition to DC supply and back-up power from battery, all VFA systems may alternatively be powered by AC supply with secondary supply from emergency generators or electricity obtained before the main switch;

- iii) Excepting sub-paras (i) and (ii) above, existing acceptance standards will continue to be applicable for VFA systems installed according to NFPA 72;
- iv) It has been confirmed with the BSI Committee that the British Standard does not specify the colour of flashing light or the light level of VFA. According to information obtained, red and amber are the two commonly used colours, and a pragmatic approach is taken to determine the visibility of VFA. To suit local application the acceptance criteria for VFA systems installed according to BS5839 are stipulated below:
 - a) The visual alarm signal shall be in the form of red flashing light to ensure consistency with existing installations; and
 - b) The minimum rating of an VFA shall be 15 cd. For spacing, the basic requirement is that the flashing light should be visible to normal eyesight in all areas required to be protected. A broad guideline for the installation is that one VFA point shall be located near every hose reel and alarm point. Each compartment shall be provided with at least one VFA point and the maximum distance between two VFA points shall not exceed 60 m.

5. VFAs should be installed in places within buildings that are accessible to the public according to general guidelines set out in the attached table. Minor amendments have been made to provisions in hotels, pursuant to Section 3.6 of the Design Manual, and in required staircases, to avoid unnecessary over-provision, e.g. only 2% of guest rooms requires this provision. Further, based on the spirit of the Design Manual, please note that this Department has considered it appropriate to waive such provision in club house facilities/car parking floors ancillary to domestic development, service apartments and student hostels allocated on semi-permanent basis.

6. Building plans shall only indicate the areas to be covered, and not the detailed positions of the VFAs, which instead should be included in the FSI drawings submitted to this Department together with Form FSI/314.

7. Requirements laid down under paragraph 5.11 (Fire Alarm Systems) of the Code of Practice for Minimum Fire Service Installations and Equipment will be revised at the next amendment.

Extent of Application of Visual Fire Alarm

Type of Buildings/Nature of Occupancy	Column 1 – Areas required to be covered by the signals	Column 2 – Areas not required to be covered by the signals
Banks, retail and wholesale shops, shopping complexes, markets, restaurants	<p>☒☒ All areas including circulation areas, common passages, and toilets.</p>	<p>☒☒ Areas not intended to be accessible to customers, visitors, e.g. offices, store rooms, plant rooms, staff toilets, etc.</p> <p>☒☒ All required staircases as defined under the 1996 FRC Code including the smoke lobbies adjoining the required staircase.</p>
Commercial and public carparks	<p>☒☒ All areas including common passages, lobbies, corridors, toilets.</p>	<p>☒☒ Areas not intended to be accessible to customers, visitors, e.g. store rooms, plant rooms, staff toilets, etc.</p> <p>☒☒ All required staircases as defined under the 1996 FRC Code including the smoke lobbies adjoining the required staircase.</p>
Government offices/buildings	<p>☒☒ Portions of the offices/buildings intended to be accessible to the public e.g. report rooms of police stations, reception areas of Government Departments.</p> <p>☒☒ Foyers, lobbies, corridors, toilets and canteens</p>	<p>☒☒ Areas intended to be accessible to staff only, e.g. offices, store rooms, plant rooms, staff toilets, etc.</p> <p>☒☒ All required staircases as defined under the 1996 FRC Code including the smoke lobbies adjoining the required staircase.</p>
Hotels	<p>☒☒ All areas including, foyers, lobbies, toilets, corridors and hotel facilities such as restaurants, lounges, shops, recreational facilities, etc. For guest rooms, paragraph 3.6 of Design Manual: Barrier Free Access 1997 shall be followed.</p>	<p>☒☒ Areas not intended to be accessible to guests, customers, visitors, e.g. kitchen, plant rooms, staff toilets, offices, back of house facilities, etc.</p> <p>☒☒ All required staircases as defined under the 1996 FRC Code including the smoke lobbies adjoining the required staircase.</p>

Extent of Application of Visual Fire Alarm

Type of Buildings/Nature of Occupancy	Column 1 – Areas required to be covered by the signals	Column 2 – Areas not required to be covered by the signals
Hospitals, rehabilitation centres	<p>☒☒ All areas including wards, consultation rooms, clinics, foyers, lobbies, toilets, corridors and restaurants/canteens.</p>	<p>☒☒ Areas not intended to be accessible to patients, inmates, visitors, e.g. kitchen, plant rooms, staff toilets, offices, laboratories, back of house facilities, etc.</p> <p>☒☒ All required staircases as defined under the 1996 FRC Code including the smoke lobbies adjoining the required staircase.</p>
Places of public entertainment	<p>☒☒ All areas intended to be accessible to the public including seating areas, passages, toilets, etc.</p> <p>☒☒ Stage areas and dressing rooms in cinemas/theatres.</p>	<p>☒☒ Areas not intended to be accessible to the public e.g. kitchen, projection rooms, offices, store rooms, plant rooms, staff toilets, etc.</p> <p>☒☒ All required staircases as defined under the 1996 FRC Code including the smoke lobbies adjoining the required staircase.</p>
Places of worship	<p>☒☒ Entire auditorium and altar including passages and aisles, etc.</p>	<p>☒☒ Areas not intended to be accessible to worshippers, visitors, e.g. offices, staff toilets, etc.</p> <p>☒☒ All required staircases as defined under the 1996 FRC Code including the smoke lobbies adjoining the required staircase.</p>
Residential Care Homes for the Elderly	<p>☒☒ All areas including dormitories, consultation rooms, circulation areas, common passages and toilets.</p>	<p>☒☒ Areas intended to be accessible to staff only e.g. offices, store rooms, plant rooms, staff toilets, staff quarters, etc.</p> <p>☒☒ All required staircases as defined under the 1996 FRC Code including the smoke lobbies adjoining the required staircase.</p>

Extent of Application of Visual Fire Alarm

Type of Buildings/Nature of Occupancy	Column 1 – Areas required to be covered by the signals	Column 2 – Areas not required to be covered by the signals
Schools/educational institutes	<p>☒☒ All areas including classrooms, halls, assembly areas, libraries, activity rooms, canteens/restaurants, gymnasiums, foyers, lobbies, corridors and toilets.</p>	<p>☒☒ Areas intended to be accessible to staff only e.g. offices, store rooms, plant rooms, staff toilets, staff quarters, etc.</p> <p>☒☒ All required staircases as defined under the 1996 FRC Code including the smoke lobbies adjoining the required staircase.</p>
Sports facilities	<p>☒☒ All areas including arenas, courts, halls, spectator stands, restaurants/café, circulation areas, common passages and toilets.</p>	<p>☒☒ Areas not intended to be accessible to athletes, spectators, visitors, e.g. plant rooms, offices, store rooms, staff toilets, etc.</p> <p>☒☒ All required staircases as defined under the 1996 FRC Code including the smoke lobbies adjoining the required staircase.</p>
Transport termini and stations	<p>☒☒ All areas including parking and waiting areas, concourses, platforms, circulation areas, common passages and toilets.</p>	<p>☒☒ Areas not intended to be accessible to the public e.g. plant rooms, station offices, regulator's offices, staff toilets, etc.</p> <p>☒☒ All required staircases as defined under the 1996 FRC Code including the smoke lobbies adjoining the required staircase.</p>

PART II
Time Related System (TRS)

Part II of this Circular Letter promulgates the approval criteria for incorporating the TRS in the Fire Detection System.

2. Clause 14.6 of BS 5839: Part I: 1988 provides guidelines for the application of TRS. Additional incorporation of the Transmission Delay Units (TDU) as provided in Clause 14.7 may be considered except in certain applications such as hospitals or residential care premises or where there are special evacuation difficulties. Subject to the general provisions of the two Clauses, local application of the system is outlined below:

- i) An initial delay period of one minute is allowed for a manual operation to be performed at the control equipment to indicate that an investigation is in progress. A further delay period not exceeding five minutes may be approved on merits of individual cases;
- ii) Initiation of an alarm condition by automatic detectors shall not result in the sounding of fire alarm or interfacing actions such as actuation of fire shutters, electro-thermal links for fire dampers, smoke extraction systems, etc. However, if during any delay period the alarm is found to be a real fire, a manual operation at the control panel or the operation of a manual call point should cause the immediate sounding of the fire alarm and transmission of the alarm;
- iii) For the avoidance of doubt, initiation of an alarm condition by the operation of a manual call point or the actuation of a sprinkler flow switch at any time should not delay or prevent the sounding of the fire alarm and transmission of the alarm.

3. The incorporation of TRS and/or TDU into the Fire Detection System shall be applied and approved on case basis. Applications should include the following information for consideration:

- i) A brief description of the premises protected by the Fire Detection System such as the number of floors, total floor areas, general occupancies, etc.
- ii) A summary of all types of fire service installations provided to the premises, setting out specifically the total number/types of automatic detectors and the interfacing actions that would be initiated.
- iii) A brief description of the management of the premises including such details as the level of staffing by fire safety/security personnel, the supervision of

control panels, the provision of emergency procedures, the means of communication for alerting responsible personnel for investigation of automatic alarm signals, etc.

- iv) The period of delay (up to a maximum of five minutes after the initial delay of one minute) under application with justifications.

4. Approval for incorporation of the systems would be subject to continuous compliance with the conditions imposed by the Director of Fire Services, which concern primarily with the level of minimum staffing to be specified for safe operation of the premises. Individual applicants may have to consult with their insurers on the installation of the systems if they consider it necessary.

PART III
Water Mist Fire Protection System (WMS)

WMS is environmentally friendly and its application for extinguishing Class A and B fires has been well documented. A review on its suitability for use in Hong Kong in light of NFPA 750/2000 Edition has concluded that this is feasible despite the absence of a set of generalized requirements and specifications governing design, installation and maintenance.

2. Accordingly, the use of WMS in Hong Kong based on the following criteria is accepted:
 - i) Prior approval has to be obtained from the Policy Division of the Licensing & Certification Command, FSD, and the WMS must have been listed.
 - ii) The protection objectives and installation design shall be endorsed by a qualified person, who should be a registered Professional Engineer under Cap. 409 in the discipline of building services or mechanical engineering, or one with qualifications acceptable to the Director of Fire Services, e.g. the system manufacturer.
 - iii) Any alteration to, repair or maintenance on the WMS after initial installation shall also be endorsed by a qualified person.
 - iv) Since WMS is an FSI item, all installation, repair and maintenance work shall be carried out and certified by a registered FSI Contractor.
 - v) The acceptance of WMS is on project basis, and initially its application is limited to protection of mechanical plant rooms.