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21 March 2024

To: Recipients of FSD Circular Letters

Dear Sir/Madam,

FSD Circular Letter No. 2/2024
Fire Protection Measures in High-rise Buildings under Construction

This Circular Letter serves to announce the revised requirements on fire protection measures in high-rise buildings under construction.

In view of several notable fires in high-rise buildings under construction, a comprehensive review had been conducted and its result revealed that the reliability of water relaying facility in such buildings had to be enhanced with a view to facilitating the firefighting operation as well as minimising property damage in the event of fire. To gather views from all stakeholders in the construction industry on the revised fire protection measures, a consultation exercise which extensively engaged relevant professional bodies, trades and government departments was conducted with positive feedback received.

In gist, the revised requirements on fire protection measures for **buildings under construction with designed construction height of 30 m or above**, measured from ground/street level, are provisions of (i) closed-circuit type water relaying system and (ii) other fire protection measures in accordance with **Annex I**.

To ensure that the responsible registered general building contractors / authorized persons (RGBC/AP) are aware of the relevant requirements, FSD Officers will visit high-rise building(s) under construction for giving suitable advice under section 7(c) of the Fire Services Ordinance, Cap. 95. Such advice will be confirmed in writing and be issued to the RGBC/AP concerned of the building(s). After a reasonable period of time, FSD Officers will make further visits to conduct practical tests on the closed-circuit type water relaying system and to ensure all the requirements are being complied with.

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The fire protection measures as listed in Annex I shall be provided when the construction of a building reaches a height of 30 m above ground/street level. In addition, the RGBC/AP concerned shall take responsibility for the followings in order to maintain the fire safety level in high-rise buildings under construction:

- (i) Ensure the fire protection measures in the high-rise buildings under construction are in efficient working order at all times by conducting regular checking and maintenance;
- (ii) Take initiative to inform the local fire station, preferably in writing, in different construction stages in relation to the provision of fire protection measures. For examples, commencement of construction works, the building structure reaches a height of 30 m above ground/street level, installation of fire pump and scheduled FSI acceptance inspection, etc.; and
- (iii) Inform the local fire station for any circumstances that may lead to the unavailability of the system or the failure of maintaining the performance of the system, such as, but not limited to, defects, temporary shut-down of or changes on the closed-circuit type water relaying system. In this regard, suitable alternative measures should be adopted without delay.

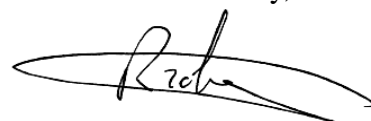
Should there be any non-provision/non-compliance of the required fire protection measures while the construction of a building reaches the height of 30 m or above, or failure of maintaining such protection measures in efficient working order, Fire Hazard Abatement Notices may be served to the RGBC/AP concerned by FSD Officers. The Fire Hazard Abatement Notices served under section 9 of the Fire Services (Fire Hazard Abatement) Regulation, Cap. 95F, are enforceable by law and offenders are liable to be prosecuted.

The revised requirements will take effect from **1 July 2024** for all initial building plan submissions received by this Department. The requirements as stipulated in FSD Circular Letter No. 2/2008 remain applicable to those building plans received before this Circular Letter being in force. Notwithstanding the above, voluntary compliance with the revised requirements before the effective date is strongly encouraged.

Seminars on the new requirements will be conducted shortly through the platform of “FSD Connects with the Industries”.

For enquiries, please contact Senior Divisional Officer (New Projects) at 3971 4600.

Yours faithfully,



(LEUNG Wai-lok)

for Director of Fire Services

Encl.

Requirements for Fire Protection Measures in High-rise Buildings under Construction

For buildings with designed construction height of 30 m or above measured from ground/street level, a closed-circuit type water relaying system¹ and other fire protection measures to facilitate firefighting operation shall be provided for each building block under construction when it reaches the height of 30 m above ground/street level. The following requirements shall be complied with:

Closed-circuit Type Water Relaying System

(a) Fire Service (F.S.) Inlet

- (1) Each F.S. inlet shall be in a prominent position on ground/street level at the exterior of each building block and preferably near the staircase where the fire hydrant outlets situated. For construction site involving one building only, F.S. inlet could be provided in a prominent position near the temporary main entrance of the construction site;
- (2) Each inlet shall be enclosed and protected against corrosion and abuse, with an all-round clearance of not less than 100 mm between any part of the inlet and the inlet enclosure;
- (3) The inlets shall be of a standard pattern accepted by the Director of Fire Services. The centre of inlet couplings shall be not less than 600 mm nor more than 1 000 mm above the ground/street level;
- (4) There shall be a non-return valve on the downstream side of each inlet;
- (5) A pressure gauge shall be provided within the inlet enclosure and shall be connected between the downstream side of the inlet and the upstream side of the non-return valve;
- (6) A durable label in English letters and Chinese characters of not less than 10 mm and 15 mm high respectively for indicating the floor level of the fire pump(s) shall be provided at each inlet enclosure;
- (7) Durable signage – ‘TEMPORARY F.S. INLET / 臨時消防入水掣’, lettering of which (both English and Chinese) of at least 50 mm high with black in colour on white background, shall be fixed at a prominent position adjacent to the inlet in order to distinguish the temporary water relaying system from the permanent fire hydrant system not yet in commission, if any; and
- (8) If a permanent fire hydrant system not yet in commission is already installed in the building, a blue label tape shall be adhered to its inlet with a notice showing ‘THIS INSTALLATION IS NOT READY FOR USE UNTIL THE WORKS ARE COMPLETED / 此裝置於工程完成後方可使用’, lettering of which (both English and Chinese) of at least 50 mm high with black in colour on yellow background, shall be fixed adjacent to such inlet.

¹ Components of the closed-circuit type water relaying system during construction stage could be reused in the fire hydrant / hose reel system required under Section 16(1)(b)(ii) of the Buildings Ordinance, Cap. 123.

(b) Riser

- (1) The rising main shall be located at or adjacent to a designated access staircase²;
- (2) The nominal bore of the rising main shall be not less than 80 mm and installed with automatic air relief valve(s) wherever applicable; and
- (3) Where fire pump(s) is/are interposed between the F.S. inlet and the hydrant outlets, provision shall be made for the water supplied to the inlet to by-pass such pump(s) in the event of failure of the pump(s) and a non-return valve shall be provided for the by-pass.

(c) Fire Pump

- (1) Electrical fire pump(s) shall be provided to relay water for all floors;
- (2) Durable signage – ‘TEMPORARY F.S. PUMP / 臨時消防泵’, lettering of which (both English and Chinese) of at least 50 mm high with black in colour on white background shall be fixed at prominent positions adjacent to each pump;
- (3) The pump set(s) shall be located in a readily accessible location and shall not cause any obstruction to the ingress or egress routes of the designated access staircase;
- (4) With the fire appliances boosting water into the F.S. inlet at a constant pressure of 800 kPa upstream of the inlet, the fire pump(s) shall be capable of providing adequate flow of not less than 900 l/min (i.e. any 2 hydrant outlets each with a flow of 450 l/min at a running pressure of not less than 350 kPa but not more than 850 kPa);
- (5) Pump(s) shall be connected to riser by fixed pipelines with a non-return valve installed at the discharge side of pump(s);
- (6) Once started, the pump(s) shall run continuously until stopped manually. Suitable start/stop push buttons together with pump status indicator lights and alarm buzzers shall be provided adjacent to the F.S. inlet(s). Clear indications in English and Chinese characters ‘TEMPORARY F.S. PUMP CONTROL / 臨時消防泵開關掣’ of at least 5 mm high shall be provided adjacent to the buttons;
- (7) Pump control panel with control switch and indication of operation status for each fire pump shall be provided at the pump or its nearby vicinity; and
- (8) All electrical fire pump(s) can be controlled simultaneously by start/stop push buttons at the F.S. inlet of the building block concerned as well as at the location of pump(s) itself.

(d) Fire Hydrant Outlet

- (1) Fire hydrant outlets for the temporary water relaying system shall be provided on every stabilized floor except the ground/street level;
- (2) Each outlet shall conform to BS 5041: Part 1. The outlets shall be of female instantaneous type conforming to BS 336 and shall be individually controlled by wheel-operated screw valves designed to open by counterclockwise rotation. The direction of opening of the valves shall be clearly engraved in both English and Chinese on the wheels;

² Provision of closed-circuit type water relaying system is exempted for building block where staircase is not required under the Buildings Ordinance, Cap. 123.

- (3) The outlets shall be fixed at not less than 800 mm or more than 1 200 mm above floor level;
- (4) The topmost outlet shall be provided on the topmost level of a designated access staircase. If such provision is not feasible due to constructional constraint, the topmost outlet shall be situated at no more than 3 storeys or 30 m below the topmost floor under construction, whichever the nearest³;
- (5) Durable signage – ‘TEMPORARY FIRE HYDRANT / 臨時消防栓’, lettering of which (both English and Chinese) of at least 50 mm high with black in colour on white background, shall be fixed adjacent to each of the outlets in order to distinguish the temporary water relaying system from the permanent fire hydrant system not yet in commission, if any; and
- (6) If a permanent fire hydrant system not yet in commission is already installed in the building, a blue label tape shall be stick to its outlet with a notice showing ‘THIS INSTALLATION IS NOT READY FOR USE UNTIL THE WORKS ARE COMPLETED / 此裝置於工程完成後方可使用’, lettering of which (both English and Chinese) of at least 50 mm high with black in colour on yellow background, fixed adjacent to each of the hydrant outlets.

(e) Power Supply

- (1) The arrangement of power supply to the water relaying system shall be undertaken by Registered Electrical Worker of appropriate grade;
- (2) Each fire pump shall be connected to the normal power supply from the construction site and to a secondary power source;
- (3) If the secondary power source is provided by an external means (e.g. diesel generator or enertainer, etc.) other than teed off before the main switch, it shall be capable of sustaining full load operation of all fire pump(s) for a period of not less than 6 hours, and be capable of supplying power for all fire pump(s) in not more than 15 seconds in case of failure of normal power supply;
- (4) The electricity supply shall have enough capacity to cater for the simultaneous operation of all fire pump(s) installed for an individual building block under construction;
- (5) The power supply shall be automatically switched to the secondary power source if the normal power fails for whatever reason; and
- (6) The use of fire resisting cable for the closed-circuit type water relaying system is highly recommended.

Other Fire Protection Measures

(f) Site Fire Hoses and Nozzles

A minimum of two detachable flexible fire hoses of male and female instantaneous type at both ends conforming to BS 336, 70 mm in diameter and minimum 20 m in length and one nozzle of male instantaneous type conforming to BS 336 shall be provided at every five storeys for the use by fire personnel during emergency. They shall be placed adjacent to the fire hydrant outlets and suitably housed to avoid unnecessary damage or vandalism. These

³ For example, the topmost hydrant outlet will be situated at the 7th storey of the building under construction when the construction height of such building reaches 30 m (e.g. 10 storeys) above ground/street level.

housings shall be suitably annotated with both English and Chinese showing 'SITE FIRE HOSES AND NOZZLE (EMERGENCY USE) / 工地消防喉及喉筆 (緊急用途)'. Marking 'SITE FIRE HOSE / 工地消防喉' and 'SITE NOZZLE / 工地喉筆' shall be clearly annotated on the fire hoses and nozzle respectively for easy differentiation as site property.

(g) Indications

- (1) Indication signs showing the access to the fire pump(s) shall be displayed at prominent positions immediate outside the entrance level of the staircase(s) and at suitable intervals; and
- (2) Floor levels and access staircases shall be clearly numbered and shown at prominent positions.

(h) Site Information

- (1) At a prominent position of the construction site entrance, the following information shall be provided:
 - (i) The name and 24-hour contact telephone number of the building contractor / responsible person supervising the provision of water relaying system; and
 - (ii) A block plan showing the general layout of all building blocks and the access routes to the entrance of each building.
- (2) At a prominent position of each building entrance, the following information of such building shall be provided:
 - (i) Construction status including current construction height and number of storeys, floor of fire pump(s) located, quantity of fire pump, etc.;
 - (ii) A set of schematic diagram showing the typical arrangements of electricity supply to fire pump(s); and
 - (iii) A set of layout plan indicating the location(s) of the fire pump(s), F.S. inlet, fire hydrant outlet, pump control panel and provision of site fire hoses and nozzles.
- (3) Such plans shall be of a minimum A3 size and provided in both English and Chinese.

(i) Lighting

Adequate lighting shall be provided at the location of the riser, F.S. inlets, fire hydrant outlets, fire pumps and control panel as well as the designated access staircases.

(j) Maintenance

Registered general building contractors / authorized persons of the site shall ensure the fire protection measures in high-rise buildings under construction are in good working order at all times by conducting regular checking and maintenance.

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