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消防安全總區

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FIRE SAFETY COMMAND

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31 March 2008

To: Recipients of FSD Circular Letters

Dear Sirs/Madams,

FSD Circular Letter No. 2/2008
Fire Protection Measures in Construction Sites

As more and more skyscrapers are continuing to be built in Hong Kong, the current requirements for fire protection measures in construction sites have been reviewed. After lengthy consultations with the trade and concerned professional bodies, revised requirements have been devised. The new requirements are considered necessary for facilitating Fire Services Department to deal with fires occurring in high-rise buildings, in particular, the skyscrapers under construction for the purpose of enhancing protection to life and property.

For buildings under construction, water relaying facilities for fire fighting shall be provided. These facilities can be arranged as follows :

- (a) **For buildings with designed height between 30 m and 80 m or below :**
- Provision of a closed circuit type water relaying system for buildings under construction in accordance with the guidelines set out at Annex I; or
 - Installation of electrical fire pump(s) or placing of portable fire pump(s) on floors to be determined by practical tests conducted jointly by the building contractors and FSD Officers. The number and capacity of the pump(s) will be at the discretion of the former provided that the pump(s) is/are fitted with standard 65 mm instantaneous coupling inlets/outlets and capable of delivering 900 litres/minute. The general guidelines at Annex I should be observed where applicable.

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Notwithstanding the above, the industry is recommended to adopt, as far as practicable, the closed circuit type water relaying system as stipulated above for better fire protection.

(b) For buildings with designed height over 80 m :

- Provision of a closed circuit type water relaying system for buildings under construction in accordance with the guidelines at Annex I. The water relaying facilities shall be provided for each building block in the construction site when it reaches the height of 30 m above ground/street level.

(c) For both types of buildings as mentioned above :

- Temporary commissioning of the fire hydrant system required under section 16(1)(b)(ii) of the Buildings Ordinance, and/or extended as the construction of the building progresses.

To ensure building contractors are aware of the above requirements, FSD Officers will visit construction sites to give suitable advice under section 7(c) of the Fire Services Ordinance and confirm this in writing to the responsible person.

After a reasonable period of time, FSD Officers will make further visits to conduct practical tests and to ensure these facilities being functioning properly.

Should there be any defects, temporary shut-down or changes on the facilities noted, it is advised that the local fire station should be informed and suitable alternative measures should be made without delay, failing which, Fire Hazard Abatement Notices may be served to the building contractor/responsible person of the construction site concerned. The Fire Hazard Abatement Notices served under section 9 of the Fire Services (Fire Hazard Abatement) Regulation are enforceable by law and offenders are liable to be prosecuted.

The new requirements and guidelines will take effect from 1 July 2008 for all initial building plan submissions received by this Department. The requirements as stipulated in paragraph 7, Part X of FSD Circular Letter No. 4/96 remain applicable to those building projects received before this Circular Letter being in force.

Yours faithfully,

(LAW Hung)
for Director of Fire Services

Encl.

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Guidelines for Fire Protection Measures in Construction Sites

1. For construction sites with designed building height over 80 m, closed circuit water relaying facilities with fixed wet/dry riser(s) and fire pump(s) to facilitate firefighting operation should be provided for each building block in the construction sites when it reaches the height of 30 m above ground/street level. These facilities shall be arranged in a Closed Circuit Type System as per schematic diagram shown at Appendix A (I) and (II).
2. When closed circuit water relaying facilities are to be employed, the following guidelines should be observed:-
 - (a) The facilities shall be capable of relaying water with a minimum flow of 900 litres/minute at a running pressure of not less than 350 kPa but not more than 850 kPa. For both the pump set(s) and the riser, the inlets/outlets shall be fitted with 65mm instantaneous couplings conforming to BS 336. The inlet/outlet shall be individually controlled by wheel-operated screw valve designed to open by anti-clockwise rotation. The direction of opening of the valve shall be clearly engraved in both English and Chinese on the wheel. The hydrant outlet shall be fixed not less than 800 mm or more than 1200 mm above floor level.
 - (b) Standard F.S. inlet shall be provided for each building block on ground /street level and be easily accessible by fire fighting personnel. Suitable signage – ‘Site F.S. Inlet’ and ‘工地消防入水掣’, lettering of which (both English and Chinese) of at least 50 mm high, indicating the inlets shall be displayed at a prominent position at the Fire Services access point on ground /street level. The F.S. inlet shall be enclosed and protected against corrosion and damage. It shall be fitted with a non-return valve.
 - (c) The fixed riser, either permanent or temporary, should be located at or adjacent to the designated access staircase. They shall be of minimum 80 mm diameter in size and installed with automatic air relief valve(s) wherever applicable. In case two or more risers for this purpose are provided in the same building, they shall be inter-connected. Where fixed fire pump(s) is/are interposed between the F.S. inlet and the hydrant outlets, provision should be made for the water supplied to the Inlet to by-pass this/these pump(s) in the event of failure of the pump(s).
 - (d) As far as practicable, the topmost fire hydrant outlets should be situated at no more than 7 storeys or 30 m below the topmost floor under construction, whichever the nearest.
 - (e) Fire hydrant outlets shall be provided on every stabilized floor except the

ground/street level. Suitable signage showing “Site FH” and “工地消防栓”, lettering of which (both English and Chinese) of at least 50 mm high, shall be fixed adjacent to each of the hydrant outlets of the temporary system in order to distinguish the permanent system not yet in commission, if any.

- (f) Suitable hydrant inlet(s) for portable fire pump(s) with non-return valve(s) and control valve(s) for releasing pressure shall be provided to the riser on the levels where fire pump(s) are provided.
- (g) If flexible fire hoses are used for connecting the portable fire pump to the riser, a minimum of four short lengths of 70 mm detachable flexible fire hoses (preferably of 6 m in length) shall be provided. They shall be placed adjacent to the pump and suitably housed to avoid unnecessary damage or vandalism. These housings shall be suitably annotated with both English and Chinese showing ‘Fire Hoses (Emergency Use)’ and ‘消防喉(緊急用途)’.
- (h) Fixed/Portable fire pump(s) shall be provided to relay water for all floors when construction being carried out above 30 m and at intervals at the discretion of the building contractors provided the performance of the pump(s) are satisfied with the criteria as at (a) above.
- (i) The pump set(s) shall be located close to the designated access staircase provided with water relay facilities and shall not cause any obstruction to the ingress or egress of the staircase.
- (j) For electrical fire pump(s), each of them shall be connected to the main electricity supply from the construction site.
- (k) All electrical fire pump(s) can be controlled individually at the main control panel on ground floor as well as at local control point, with protection device to avoid pump running under no flow situation. Local control panel with control switch and indication of operation status for each fire pump shall be provided at its nearby vicinity. For fixed electrical fire pump(s), start/stop buttons of the pump(s) to be provided at the Site F.S. Inlet on ground/street level.
- (l) The electricity supply shall have enough capacity to cater for the simultaneous operation of all electrical fire pump(s) installed/provided for the building under construction.
- (m) Fire-resistant type power cables for the facilities are highly recommended. The power cables shall be properly fixed on wall. Each fire pump shall be provided with duplicated power cables separately routed to avoid complete power failure resulted from mechanical damage. The duplicated power cables shall comprise a cable connected from electrical mains and the other

teed off before the main switch. Provision of a changeover switch of power supply to secondary power at the incoming main switch shall be located at the ground/street level. The power supply shall be automatically switched to the secondary power if the normal power fails for whatever reason. All electric work shall be undertaken by Registered Electric Worker of appropriate grade.

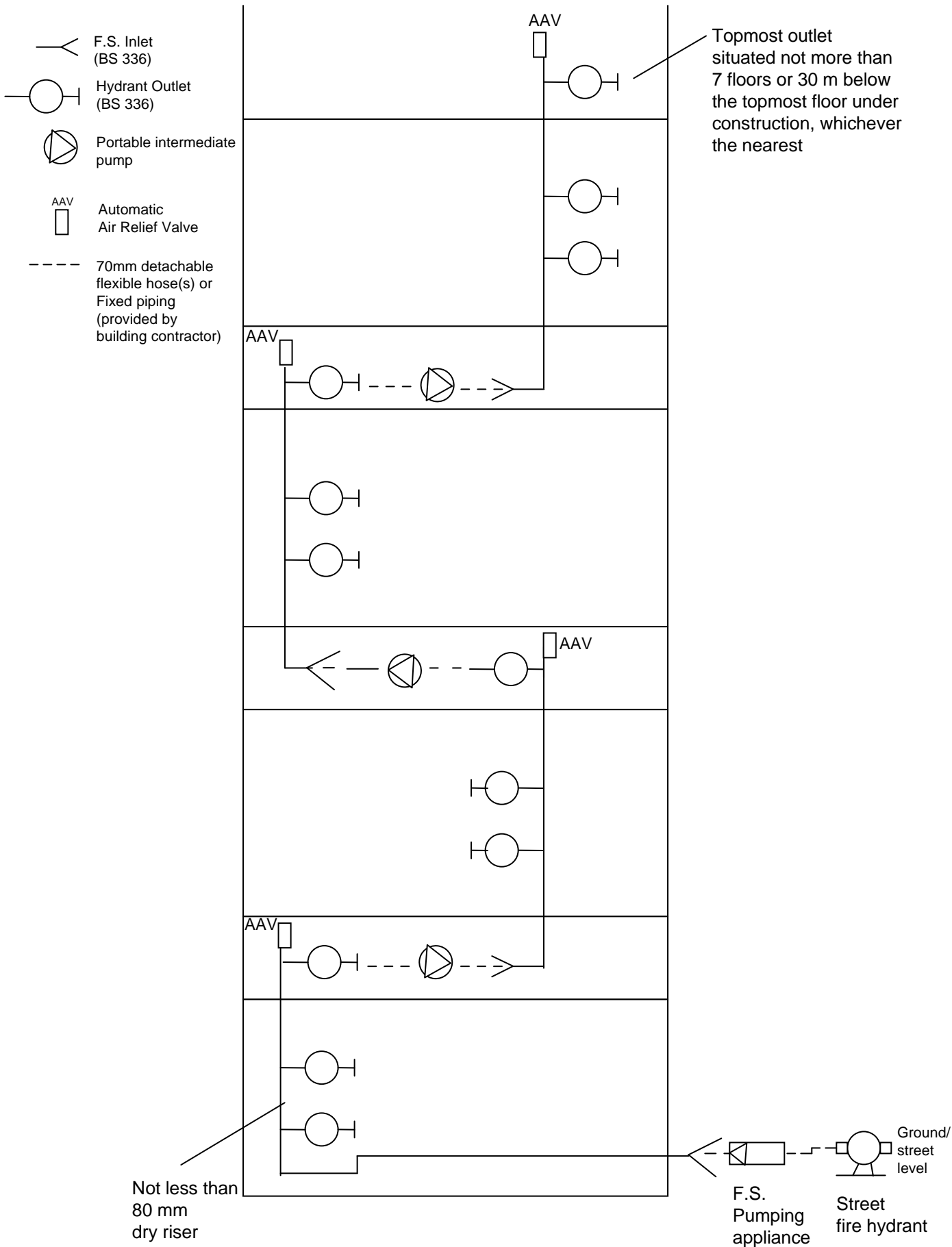
- (n) All fire pump(s) and wiring for the facilities shall be properly insulated, fitted and protected. Relevant Regulations under the Factories and Industrial Undertakings Ordinance, Cap. 59 and Fire Protection Notice No. 13 for construction sites safety should be observed.
- (o) In case that a diesel pump is employed for the purpose, a fuel tank of adequate capacity shall be provided for continuous running of the pump for not less than one hour. The location for the pump shall have good ventilation. Relevant requirements and Dangerous Goods Ordinance shall be observed for any fuel storage.
- (p) To avoid air lock problem, automatic air relief valves shall be provided at intervals where fire pump(s) is/are employed.
- (q) To avoid the running pressure in excess of 850 kPa, parity valves shall be provided where applicable.
- (r) Directional signs showing the access to the fire pump(s) shall be displayed at a prominent position immediate outside the entrance level of the staircase(s) and at suitable intervals.
- (s) Floor levels and access staircases shall be clearly numbered at prominent positions.
- (t) Adequate lighting shall be provided at the location of the riser, hydrant inlets and outlets, fire pump(s) and control panel as well as the designated access staircase.
- (u) A plan of minimum A1 size, in both Chinese and English, showing the location(s) of the fire pump(s) and pump control panel shall be provided. Besides, a block plan showing the general layout of all building blocks and the access route shall also be provided. Both plans shall be provided at a prominent position at the entrance of the construction site or the site office and to the local fire station for information.
- (v) The temporary water relaying facilities in construction site shall be under periodical checking and proper maintenance to ensure that the system is in good working order at all times. The name and phone number of the responsible person(s) supervising the provision of water relaying facilities

shall be provided at the construction site entrance.

- (w) Schematic diagrams showing the typical arrangements of electricity supply are shown at Appendix B and C.

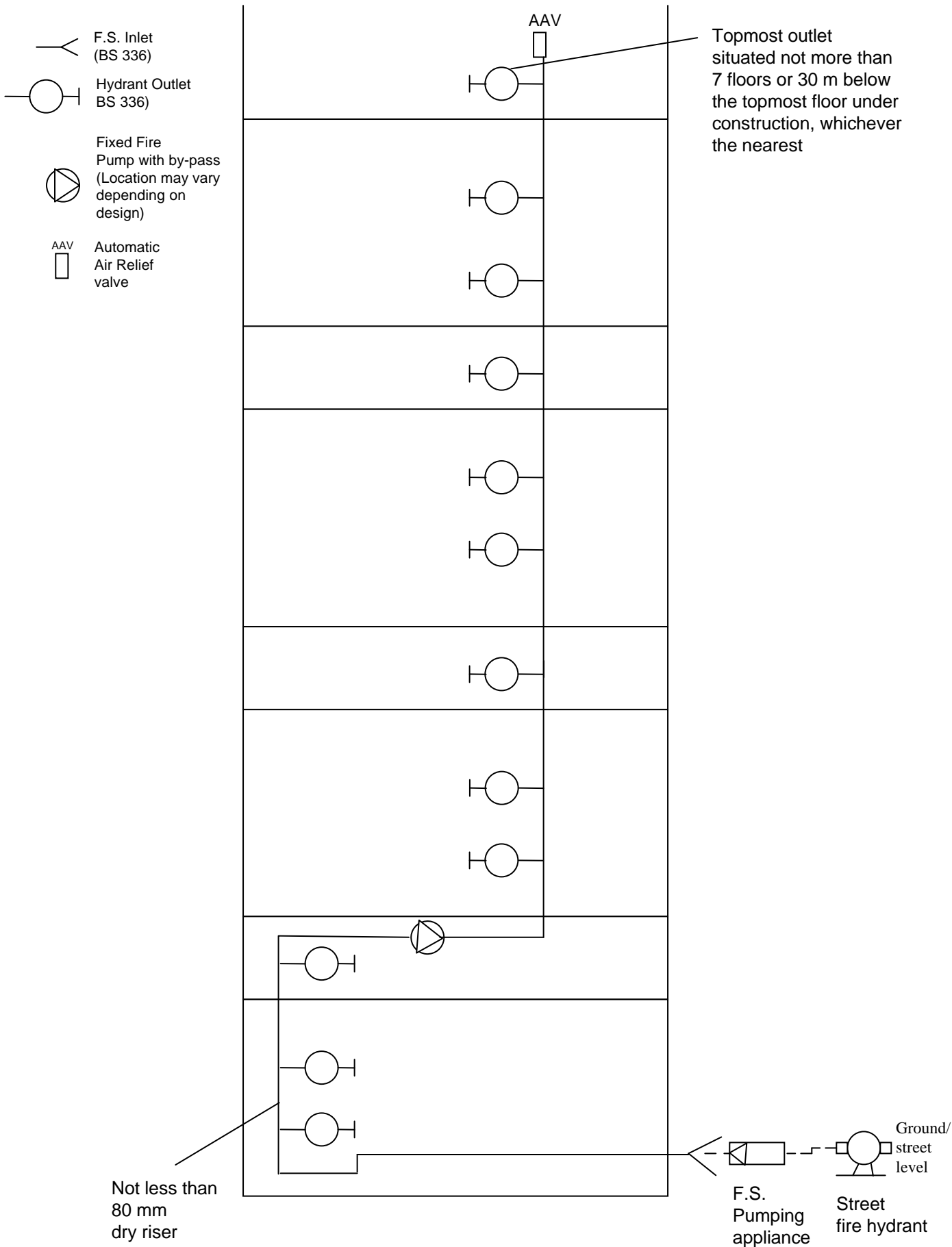
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Closed Circuit Water Relay Arrangement using Portable Fire Pump(s) for High-rise Building Under Construction



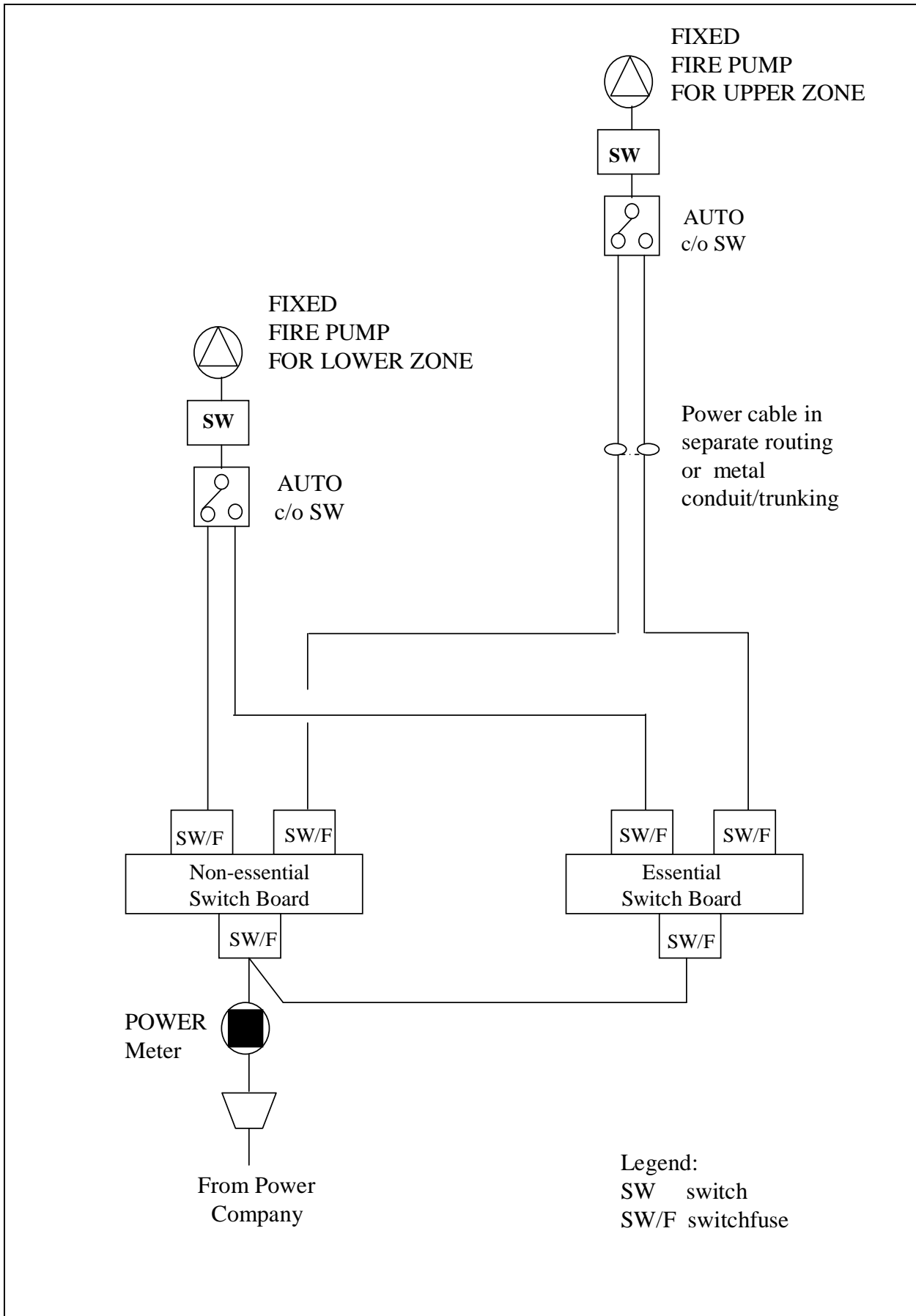
Closed Circuit Water Relay Arrangement using Fixed Fire Pump(s) for High-rise Building Under Construction

Appendix A (II)



Schematic Diagram of the Electricity Supply
for Fixed Fire Pumps (Single Tower)

Appendix B



Schematic Diagram of the Electricity Supply
for Fixed Fire Pumps (Multiple Towers)

Appendix C

