



FIRE SAFETY AND SHELTER DEPARTMENT
SINGAPORE CIVIL DEFENCE FORCE

FIRE SAFETY REQUIREMENTS FOR TEMPORARY WORKERS' QUARTERS IN UNCOMPLETED PERMANENT BUILDINGS ON CONSTRUCTION SITES

FSR 2:2008

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1 SCOPE

- 1.1 The scope of this Fire Safety Requirements comprises (FSR) the design, construction, installation and maintenance of temporary workers' quarters in uncompleted buildings on construction sites. It also includes fire safety plans submission procedures for such workers' quarters.
- 1.2 This FSR shall not be applicable if the aggregate number of workers housed in the temporary workers' quarters in the uncompleted permanent building(s) on the construction site is not more than 40.

2 GENERAL

- 2.1 The temporary workers' quarters shall be located within the boundary of the construction site.
- 2.2 The temporary workers' quarters shall not be located higher than 10m above the access road level of the uncompleted building and shall not be lower than second basement level.
- 2.3 The temporary workers' quarters shall only be used for housing workers working within the construction site.
- 2.4 The accommodation period for the temporary workers' quarters shall be up to the time before Temporary Occupation Permit (TOP) application from the Building & Construction Authority (BCA).

3 SUBMISSION OF FIRE SAFETY PLANS

- 3.1 The main contractor of the project shall engage a Qualified Person(s) to design and supervise the erection of the temporary workers' quarter(s).
- 3.2 The Qualified Person(s) shall submit fire safety plans for the proposed temporary workers' quarters to SCDF for approval prior to the commencement of the fire safety works. Upon completion, the QP shall inspect the fire safety works and issue a Certificate of Supervision after all fire safety works have been inspected and complied with all fire safety requirements stipulated in this FSR. Inspection by Registered Inspector (RI) and TFP/FSC application are not required.

4 FIRE SAFETY PROVISIONS

4.1 Occupant Load and Exit Provisions

- 4.1.1 The occupant load shall be based on the floor area of the temporary workers' quarters on the basis of 3m² per person, excluding non-simultaneous areas such as toilets, kitchens etc., or the actual number of occupants for which each occupied space of the floor is designed as shown on the plan, whichever is greater.
- 4.1.2 The travel distance, measured from the most remote point of the quarters to the nearest exit staircase or other exits, shall not exceed the maximum travel distance permitted under Table 1 below.

Max Travel Distance (m) (One-way travel)		Max Travel Distance (m) (Two-way escape)	
Unsprinklered	Sprinklered	Unsprinklered	Sprinklered
15	30	45	75

Table 1: Travel Distances

- 4.1.3 Every storey shall be provided with exit facilities for its occupant load. Only those exits designated for escape of the workers shall be included in the exit capacity calculations.

4.2 Compartmentation

- 4.2.1 Only non-combustible materials shall be used for the construction of temporary workers' quarters.

- 4.2.2 The floor area of each worker bedroom or the total floor area of a group of small worker bedrooms shall not exceed 120m². Compartment wall of having fire resistance rating of at least 1 hour shall be provided to separate the bedrooms so as to limit each compartment size to a maximum of 120m².
- 4.2.3 The worker bedrooms shall be separated from the internal corridor by a wall having fire resistance rating of at least 1 hour. Doors opening into the internal corridor shall have fire resistance rating of at least half an hour.
- 4.2.4 The worker bedrooms shall be separated from the external corridor by a wall having fire resistance rating of at least 1 hour, except that ventilation openings of non-combustible construction can be fixed at or above a level of 1.1m, measured from the finished floor level of the external corridor to the sill height of the opening. Doors opening into the external corridor are not required to have fire resistance rating. External corridors shall conform to the requirements of external exit passageway for minimum width, change in floor level, roof protection and enclosure on the open side.
- 4.2.5 Cooking is only allowed at a designated kitchen area, including basement(s). Such kitchen, unless having adequate setback from the temporary workers' quarters, shall be enclosed with minimum 1-hour fire-rated compartment wall and ½-hour fire rated door.
- 4.2.6 Office and storage are allowed in the basement(s) where the temporary workers' quarters are located. They shall be compartmented from the accommodation areas with minimum 1-hour fire-rated compartment wall and ½-hour fire rated door.
- 4.2.7 Hot work is not allowed in the basement(s) where the temporary workers' quarters are located.

4.3 Exit Staircase

- 4.3.1 For above ground levels, provision of only one exit staircase is permitted provided that the one-way travel distance stipulated in Table 1 above is complied with. The exit staircase shall discharge directly to exterior open space.
- 4.3.2 At least two independent exit staircases shall be provided for the temporary workers' quarters located in basement levels.

4.4 Emergency Lightings and Exit Signs

- 4.4.1 Emergency lightings and exit signs serving the temporary workers' quarters shall comply with the requirements stipulated in the Fire Code.

5 FIRE FIGHTING PROVISIONS

5.1 Dry/Wet Riser System

- 5.1.1 Where dry riser system is required for the main development, they shall be commissioned and made operable for the storeys housing the temporary workers' quarters during the accommodation period. Wet riser system is not necessary for the sole purpose of such temporary workers' quarters during the accommodation period.
- 5.1.2 Standby fire hoses can be installed in lieu of the dry riser system, on condition that the temporary workers' quarters are adequately covered by fire hose reel(s).

5.2 Access road for Fire Fighting Appliances

- 5.2.1 Provision of fire engine access road shall be provided in accordance with the requirements for the development. Only the portion of the fire engine access road serving the temporary workers' quarters shall be made available.

5.3 Fire Hydrant Provision

- 5.3.1 Every part of the required fire engine access road shall be within an unobstructed distance of 50m from the nearest working fire hydrant.
- 5.3.2 Where the remotest temporary workers' quarter is located not more than 100m away from the site entrance at the public road, provision of working private fire hydrant is exempted.
- 5.3.3 A temporary "dry" fire hydrant is allowed. The "dry" fire hydrant shall be connected to a 150mm diameter pipe, which shall be connected the other end to a 4-way breeching inlet. This breeching inlet shall be within 18m from any accessway or fire engine access road having minimum 4m width and within 50m from any wet fire hydrant.

5.4 Fire Extinguisher / Fire Hose Reel

- 5.4.1 Provision of fire extinguishers shall comply with the requirements stipulated in the Fire Code.
- 5.4.2 Provision of fire hose reels shall comply with the requirements stipulated in the Fire Code.

5.5 Fire Protection Systems

- 5.5.1 Temporary workers' quarters located in basement(s) shall be protected by an automatic sprinkler system, irrespective of compartment size. Provision of automatic sprinkler system is exempted if the basement(s) is effectively cross-ventilated to avoid smoke logging conditions.
- 5.5.2 Effective cross-ventilation shall be achieved by means of evenly distributed vertical openings along the perimeter walls and evenly distributed voids over the basement(s) in such manner that:
- (i) no point within the basement(s) is more than 12m from any vertical opening or void for spaces that are in between two openings or voids;
 - (ii) no point shall be more than 6m from any opening or void for spaces that are ventilated by such opening or void on only one side; and
 - (iii) such vertical openings shall be at least 600mm in height;
- 5.5.3 The total aggregate area of these voids and vertical openings shall also be not less than 20% of the total basement floor area.
- 5.5.4 Automatic fire alarm system shall be provided if provision of automatic fire sprinkler system is exempted for the temporary workers' quarters located in the basement(s).
- 5.5.5 For temporary workers' quarters located above ground level, manual alarm system shall be provided.
- 5.5.6 Connection of fire protection systems to the DECAM system is not required.

5.6 Engineered Smoke Control System

- 5.6.1 Engineered smoke control system shall be required for the basement levels where the workers' quarters are located, if the provision of cross ventilation stipulated in section 5.5 cannot be fulfilled.
- 5.7 Requirements in sections 5.5 (except clause 5.5.4) and section 5.6 are exempted if the occupant load of the temporary workers' quarters at the basement level is computed basing on 6m² per person, instead of the 3m² per person specified in clause 4.1.1.

6 SECONDARY SOURCE OF POWER SUPPLY

- 6.1 Secondary source of power supply shall be provided for all fire fighting systems serving the temporary workers' quarters.
- 6.2 The location, arrangement, control and installation of electrical wiring of the secondary source of power supply, be it in the form of battery, standby generator, inverter or other accepted equipment, shall comply with the requirements stipulated in the Fire Code.
- 6.3 The secondary source of power supply shall be sufficient to last for a minimum duration of 2 hours.

7 STORAGE OF HAZARDOUS MATERIALS

- 7.1 All stores of highly flammable substances shall be sited in open space at a minimum distance of 5m away from the building where the temporary workers' quarters is located.
- 7.2 All LPG cylinder installations serving the temporary workers' quarters shall comply with the Fire Safety Requirements for Liquefied Petroleum Gas (LPG) Cylinder Installations stipulated in the Fire Code.

8 Housekeeping

- 8.1 All temporary workers' quarters shall be maintained in good conditions and they shall not be allowed to deteriorate into a slum-like condition through unauthorized extensions and overcrowding. Unwanted articles shall not be stored in and around the temporary workers' quarters.
- 8.2 All exits, escape routes and passageways shall be kept free of obstruction at all times.

