



Kingdom of Saudi Arabia
Ministry of Interior
General Directorate of Civil Defense

Regulation of Safety Conditions and Fire Protection in High-Rise Buildings

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Chapter 1

Definitions

Article (1)

The following terms and expressions, wherever mentioned in this document, shall have the meanings ascribed thereto hereunder each unless the context indicates otherwise.

A. Law:

The Civil Defense Law issued by virtue of Royal Decree No. (M / 10) dated (10/05/1406H).

B. Regulation:

The Regulations of fire safety and protection conditions in high-rise buildings.

C. High-rise Buildings:

Buildings in which the upper floor height exceeds (28 meters) from the ground level by the main entrance side.

D. Underground floors (the basement):

The parts under the building exits. Any floor or a part thereof shall not be considered underground unless all of the following conditions are met:

1. If the floor has side openings not less than (2 Sq.) above the ground in that side with (15 meters) from the length of the outer wall of the floor.
2. The floor openings should not be less than (60) cm in width and (20) cm in length, and not be obstructed in order to allow ventilation and rescue operations from the outside.
3. The height of the openings base shall not exceed the flooring with (110 cm).
4. The openings shall be clear and visible from inside and outside building.
5. The windows of these openings shall be easily opened from outside and from inside without any obstacles such as steel bars or otherwise.

E. Emergency Exits:

A group of exit points for escaping from building, provided that exit point shall be passable and free of any fire danger in order to enable existents to get away from any exit point and directly reach outside or to any safe yard or a zone leads up to the outside.

F. Protected Zones:

Safety zone in the building with special protection features for specific period of time provides safe shelter for existents free of fire and smoke danger.

G. Interim Evacuation (Horizontal Evacuation):

The case of existents escape through any point of damaged part of building and reaching a safe zone free of fire which leads up to outside, since that part is often in the same floor to maintain horizontal evacuation, so it is (interim evacuation) where individuals exit to the outside.

H. General Evacuation (Vertical Evacuation):

The case of existents escape through any point to the outside; it is called the vertical evacuation.

I. Automatic Protection System:

A system working in conformity and consisting of different auto-parts work for alarm and fire protection. The system operates automatically through sensing fire by its parts without human intervention.

J. Competent Authority:

Ministry of the Interior (General Directorate of civil defense) and other authorities concerned with licensing facilities and its activities.

K. Safety officer in charge:

Staff member in a building appointed or assigned to be responsible for all the safety and security related works, supervising staff of the building according

to stipulated in Regulations in this regard, and reporting each incident to the civil defense since it would be dangerous. His duties and responsibilities shall be determined in accordance with the Regulations (concerned with industrial safety and security work) issued in this regard.

L. Specifications:

1. Saudi Standard Specifications: The Standard Saudi Specification issued by the Saudi Standards, Metrology and Quality Organization (SASO) including the international standard specifications adopted and approved by the organization as Saudi standard specifications.
2. International Standard Specifications: The standard specifications issued by international or organizations or bodies such as the International Standard Organization (ISO), International Electro Technology (IEC), International Organization of Legal Metrology (OIML) and others. The specifications are recommended by (SASO) for organizing in the case of failure to provide specifications of standard Saudi Arabia.

M. Civil Defense Representative:

The person or persons authorized by the General Directorate of Civil Defense or one of its branches to inspect, control and investigate violations and abuses in accordance with the rules and procedures stipulated in relevant regulations in order to ensure the building safety, equipment of safety tools and fire protection. Violations shall be determined and investigated as well as imposing stipulated penalty in accordance with the regulations for considering violations of civil defense system and regulations.

N. Preventive Conditions:

All engineering, technical arrangements or procedures necessary to protect the building against hazards, facing or reducing its effects in order to protect the residents and properties.

O. Saudi Building Code:

The conditions and requirements and its supplements of rulings, executive



rules and addendums relating to building and construction to ensure the public safety and health. The code was circulated by the telegram No. (11397/ b) dated (18/3/1930 H.) of His Royal Highness, Head of Cabinet Office.

Chapter 2

General Terms and Conditions

Article (2)

This Regulations shall be applied to buildings in which the height of its upper floor occupancy exceeds about (28 meters) above the flooring level by the main entrance side, and applied to buildings to be constructed after the issuance of these regulations and buildings under repairing or changing use.

Article (3)

The Regulations shall include high-rise buildings with several activities in different parts of building, so every part shall be subject to safety requirements and protection of the lives who manage this activity, and taking degree of top protection. Regulations are concerning terms and requirements of the civil defense only without exposure to the rest of the conditions and requirements within the jurisdiction of the other relevant authorities.

Article (4)

Licensing shall not be permissible to construct high-rise buildings unless applicant submits prepared technical study done by technical office or authorities concerning with safety works, alarm and fire protection approved by the General Directorate of Civil Defense clarifying the extent of compliance with the specifications and instructions stipulated in this Regulations for adopting the study by the civil defense.

Article (5)

The office in which the study – referred in Article (4) – was prepared shall be accountable before the civil defense and other relevant authorities

regarding the seriousness and accuracy of the study as well as surveillance its implementation. Also shall be committed to provide a final certificate confirms that office is confronting the instructions and requirements stipulated in this Regulation. The building shall not be allowed to be used unless after examination by the representative of the civil defense and obtaining the approval for preparations. In the case of office being uncommitted to the adopted study due to negligence which shall be subject to sanctions and penalties cited accordingly.

Article (6)

The safety officer in charge is directly responsible for all of the following:

1. Issues related to safety and fire fighting in the building.
2. Setting a plan for the emergency to be introduced to building staff for training upon coordination with the center of civil defense located in the surroundings.
3. Conducting periodical examinations and tests every three months for all the equipment, machinery, electrical & mechanical installations, and all means of safety, firefighting, surveillance, alarm equipment. In addition to repairing any malfunction or defect immediately. Any negligence or failure in this regard shall be considered as severe negligence and subject to sanctions and penalties cited accordingly.

Article (7)

The safety officer in charge shall be committed to allocate a register called (register of safety, alarm devices and firefighting) according to the model prepared by the civil defense in which all pages are stamped by the seal of the competent civil defense department. The register shall contain all monthly examinations and periodic tests for firefighting, surveillance and alarm means and equipment, in addition to its dates, the authority of examinations and methods used, as well as results and processes of repair and other data. A part of the register shall be allocated to checking and maintenance operations for building, devices and electrical and mechanical constructions. It shall be

maintained in building administration in order to be under the disposal of the civil defense representative at all times for the codification of notes and violations and sanctions.

Article (8)

The safety officer in charge may report to the competent civil defense department regarding the dates of periodic tests procedures and determine the authority in charge of these tests in accordance with the agreement upon an appropriate date for the presence of the civil defense representative during the tests, as well as confirmation by virtue of the signature of civil defense representative in the register.

Article (9)

He shall train the building staff on the safety works, firefighting, rescue, ambulance and evacuation at specialized training schools and institutes in Saudi Arabia and approved by the General Directorate of Civil Defense or one of the its centers. The authority claiming training shall incur training costs or its quota of course costs on the basis of the cost of single trainee.

Article (10)

The violations of these regulations shall be determined, investigated and imposing penalties according to the contents of civil defense law and regulations to consider the violations of the law, regulations, instructions and issuances from the General Directorate of Civil Defense including upcoming regulations or instructions regulate these matters.

Chapter 3

Conditions and Requirements of Safety and Protection

Article (11)

Requirements of site organization for access of civil defense vehicles and equipment:



- A. When submitting the site plans for the getting approval, it shall be complied with construction laws as well as clarifying place of project, the important locations, the neighbouring buildings and their purpose of use, it is necessary to mention the names of the streets surrounding the site.
- B. The street or road appropriate for the passage civil defense vehicles shall be as follows:
 - 1. Its net width shall not be less than 10 meters.
 - 2. Provide a sufficient space for maneuver with diameter not less than 18 meters.
 - 3. The height of gates and entrances of streets and roads should not be less than 4.5 meters.
 - 4. The flooring of the street and manholes covers shall be constructed specifically to bear the weight of Civil Defense vehicle types.
- C. The design of the building and its distance from the neighboring buildings shall be determined with the approval of the civil defense, according to the nature of usage.
- D. In the case of different and several buildings – such as complexes – the following should be taken into consideration:
 - 1. The roads and streets shall be sufficient for civil defense vehicles and auxiliary equipment to reach the required distance.
 - 2. It is necessary to provide sufficient entrances and exits for cars.
 - 3. It is necessary to distribute the water spouts to extinguish the ground fire and to be around the buildings.
- E. A space shall be between the building limits and the nearest point reached by civil defense vehicles depending on the type and bulk of the building according to the following:
 - 1. The space in buildings equipped with dry nozzles network of extinguishing water shall not exceed (17) meters.
 - 2. In buildings equipped with nozzles network of running extinguishing water, the distance between the stairs entrance containing water extinguishing nozzles shall not exceed (17) meters.



- F. Appropriate traffic signposts shall be fixed to prevent standing in parking or streets allocated for mechanisms and vehicles of civil defense.

Article (12)

The access of civil defense personnel:

- A. It is stipulated in the design of the building to be equipped with the means and prospects enabling the civil defense personnel to access easily and conveniently for carrying out control and rescue work.
- B. It is not permissible to install barriers and obstacles beside windows of external interfaces located above the ground floor of building unless to be easy-opening under special approval from the civil defense.
- C. Take the following into account when setting firefighting equipment for helping civil defense personnel such as nozzles and pushing points in ground floor and so on:
1. The equipment of firefighting equipment allocated to help civil defense personnel in a clear place to be easily accessible be civil defense personnel without any obstacles.
 2. The firefighting equipment allocated to assist the civil defense personnel should be far from the danger of fire, glass and materials that may be dispersed as a result of fire or other hazards.
 3. Firefighting equipment designated to assist civil defense personnel shall be labeled with clear and explicit signals.
 4. Taking into account the application conditions and special specifications to be confront with the different firefighting equipment.
- D. If the building requires a basement (underground floor), emergency openings (entrances and exits) shall be exist in order to discharge the smoke to help civil defense personnel for firefighting, considering the following in these openings:
1. To be in a clear and accessible position by the civil defense personnel.
 2. Emergency openings shall be labeled with signposts stating its purpose.
 - 3- To be covered with materials being easily opened or broken by civil defense personnel when needed.

4. If site area exceeds 5,000 square meters, main entrance shall be provided for emergency in the external fence of the site to ease the access of civil defense personnel.
5. Guiding posture within a frame shall be fixed in the entrance of the main building, showing all the information regarding requirements of fire protection to help the civil defense personnel access.

Article (13)

Construction Requirements:

1. Municipalities as competent authorities shall determine these requirements to supervise the issuance of the licenses necessary for the building. All engineering drawings shall be designed by consultant being certified according to the rulings, regulations and instructions applicable by the Ministry of Municipal and Rural Affairs.
2. If the area being located within seismic activity, the designer shall prepare the construction accounts for the safety of the building to face earthquakes threat. The building shall be constructed under the supervision of certified consultant office.
3. Materials (aluminum / iron / glass panels) used for the cladding of buildings shall be of fire-resisting types.
4. The openings and joints between the flooring and the curtain wall shall be closed using a (Fire Stopper) system or materials fixed tightly to prevent the leakage of flame and hot gases being confront with its standard specifications.

Article (14)

Emergency Exits:

1. Emergency exits include corridors, (horizontal evacuation) doors, stairs, preventives of smoke spreading and regressions (level crossing).
2. The doors of the emergency exits shall be fire-resistant and preventing flame and smoke, being of the types equipped with a linear bar for opening, and to be opened to the outside.



3. Emergency Exits shall include (numbers, capacity and distribution to parts of the building) with the quantity and the method stipulated in the applicable Saudi Building Code.
4. The net width of any corridor to emergency exit point shall not be less than of for (150 cm) except the corridors leading to the places allowing the use of ladders for escape as stipulated in Saudi Building Code.
5. The number of emergency exits shall not be less than (two exit points for each floor) or for each part of the building including the underground floors.
6. Considering distribution of emergency exits, each exit corridors shall be in the different direction from the others, so the length of frequent joint corridors shall not exceed (15) meters.
7. Any closed corridor shall not be more than the (7, 5) meters.
8. The limited or zero human existence (such as places of building operation machines) shall not be subject to the specifications of emergency exit capacity due to the limited existents.
9. The electric elevators, escalators or circular ladders shall not be considered as means for escape.
10. In the high-rise buildings, upper and underground multiple floors when moving up or down to distances exerting the fit person, the stairs to be used for reaching the safe places and then to use the elevators.
11. Emergency exits in the high-rise buildings shall serve other floors than the floor to be evacuated from the exit point. The internal open stairs shall not serve more than one floor.
12. Survival Ladders permitted for use in high-rise buildings shall be confronted with the Saudi Building Code.
13. Lighting for emergency exits and their signs shall be provided in the manner mentioned in the Saudi Building Code.
14. Written consent shall be taken from the civil defense to allow reduction of lighting in the building in which people are only allowed for existence during the hours of the day hours, without the written consent, it is obligated to emergency lightening in all parts of the building.
15. The walls, roofs and corridors of emergency exits shall be free of flammable materials.

16. The elevators shall be connected with alarm devices alarm so the elevator is to be taken down automatically to the nearest floor or underground floor in the case of fire.
17. Being obliged with Smoke Evacuation systems and shall be used according to what is mentioned in (NFPA92A).

Article (15)

Backup Electrical Powers:

- A. The backup electrical power shall be provided according to the Saudi Building Code.
- B. The backup electrical power shall cover at least the basic needs of the following:
 1. Emergency Lighting System.
 2. Devices Alarm System.
 3. Pump or pumps of water for extinguishing fire.
 4. 4. One elevator at least and to reach all floors (so this electric power could be transferred to another elevator).
 5. All mechanical equipment to prevent smoke leakage.
 6. Control, surveillance, safety and calling devices.
 7. Elevators that are not being linked to the backup source should be equipped with a battery, so in the case of power outage the elevator is to operate to go down to the nearest floor and its doors being open automatically.

Article (16)

Surveillance and Control Room:

Each building shall be equipped with surveillance and control room to oversee the safety and security of equipment in the building containing the following:

1. Control equipment for audio and video alarm devices.
2. Internal communication devices (intercom two way telephone communications).
3. Indication Panels for sensing and alarm devices.



4. Determination devices for cabins elevators places and locations.
5. Control devices for closing and opening the doors of the exits automatically.
6. Control devices for water valves or sprinklers and fire water valves.
7. Data devices for the status of fire water pumps.
8. External telephone device for external communication.
9. Devices controlling the ventilation and air conditioning system and their relationship to the fire alarm system.

Article (17)

Protection of vertically open zones:

All vertical openings such as stairwell, elevator shaft and escalators and other vertical openings. The openings shall be protected to prevent persons falling out and being separate from all parts of the building to be an independent fire sector fulfills the protection and fire resistance for a period not less than two hours. This shall be applied to windows and openings that are connected to these openings and comply with the specifications mentioned in the Saudi Building Code.

Article (12)

Finishing of Building flooring:

Special requirements from the Civil Defense are applied to building floorings, so they shall be treated, fire-resistant and slipping-resistant materials.

Article (19)

Sensing, Alarm and Communication Systems:

1. Sensing and alarm systems in the buildings shall be provided according to the specifications stipulated in the Saudi Building Code, provided that the operating methods shall be automatic.
2. The need for audio alarm system shall be based on evacuation system to protected zones in the floor or the building (temporary or vertical evacuation) against the vertical evacuation for building existents at all floors.



3. The need for temporary evacuation to protected zones or general vertical evacuation for the building existents shall be based on the type of activity in the building, its height and the smoke and flames stopping system.
4. Means of telecommunication shall be provided (two way telephone communications – Intercom) between the surveillance room at the building and each of:
 - a) Elevator cabins.
 - b) Elevator entrances halls.
 - c) Landing of stairs in each floor, and this system is to be installed according to the specifications stipulated in in Saudi Building Code.
 - d) Telephone line shall be provided at the surveillance and control room in the building to ease external communication with the support departments at emergency times.

Article (20)

Systems of Fire Extinguishing:

1. Automatic Water sprinklers for fire extinguishing shall be designed for the entire building, in addition to being installed and maintained in accordance with the specifications stipulated in in Saudi Building Code.
2. Sprinklers valves, and outlets of water for fire extinguishing shall be appropriate for civil defense personnel usage in each floor of separated zones (like stairs) so that can separate the floor or other floors and be compatible with the equipment and facilities of civil defense.
3. It is unneeded to protect the water closets or clothing cabinets (boards) with water sprinklers in the residential zones of the building, to make the entire building protected with water sprinklers system.
4. Designing the water transport pipes for the utilization of civil defense with 4–6 inches diameters. The pipes shall be dry in normal days; water could be pumped to reach the upper floors during the emergency case. It shall be designed, installed, tested and maintained in accordance with specifications stipulated in in Saudi Building Code.



5. The dry pipes shall be connected with a point in the main street to enable civil defend pumping water to the upper floors for use in firefighting with double entrances (2,5) inches on the shape of the character (y) approved by the civil defense.
6. Water outlets shall be provided for firefighting uses by civil defense in each floor of the building in the protected zone (like stairs) with (205) inches outlet supported with water valve. A connection shall be installed to become the final outlet for accessing civil defense hoses (1, 5) inches inside the building and provide water hose rolls with sufficient lengths to cover the total areas of the floor. Hoses shall be placed in its box in the water outlet and valve or next additional box.
7. Underground floors shall be protected with automatic water sprinklers as a basis for protection, and then it protects zones with special danger with another system according to its contents.
8. Providing fire extinguishers and extinguishing hoses for the building residents with the mentioned manner according to the specifications stipulated in in Saudi Building Code. The instructions of use shall be written in Arabic in addition to the English language. Fire hoses shall be for the usage of building residents with opening of one inch being rolled up. The amount of emerging water (65) gallons per minute with pressure not less than for (25) pounds per inch.

Article (21)

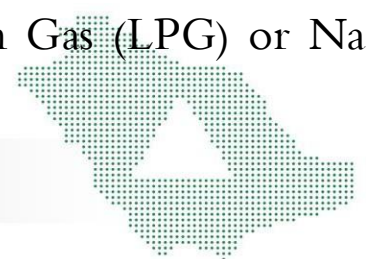
Protection from hazardous materials:

The building shall be protected with automatic extinguishing special hazardous in the building, and testing the appropriate system to reduce the degree of risk and protection for residents giving them sufficient time to evacuate.

Article (22)

Requirements for operation units:

- a) Operating installations with Liquefied Petroleum Gas (LPG) or Natural Gas:



Specifications stipulated in Saudi Building Code shall be applied to units operating with liquefied petroleum gas or natural gas shall be applied to the pipework.

b) Electrical Connections:

1. The list of electrical wiring rules in buildings issued by the Ministry of Water and Electricity in the Kingdom of Saudi Arabia shall be applied to their installations.
2. Electrical drawings of the building shall be designed by certified engineering consultant. The implementation and installation shall be done qualified electricians under the supervision of electrical engineer.
3. Lightning rod shall be installed in the building according to the Saudi Standard Specifications (SASOINFPA 780).

c) Air Conditioning:

Ducts and equipment of ventilation, heating and air conditioning units shall be installed according to the specifications stipulated in in Saudi Building Code.

d) Food cooking devices:

Commercial food cooking devices (such as commercial kitchens and restaurants) shall be installed according to the requirements of the specifications stipulated in the Saudi Building Code.

Article (23) Elevators

1. Elevators shall be designed and installed according to specifications of the Saudi Standards, Metrology and Quality Organization “SASO” (electrical elevators for personnel or goods with specifications parts as of first part to the eleventh).
2. The elevators shall not be considered as an escape means like emergency exits, they are prohibited for usage during emergencies except in the following cases:



- a) If the elevator is automatically connected to work with an independent electric current and the stairwell within positive pressure case in order to achieve the necessary protection from smoke effects.
- b) The service elevator used during normal days to transport furniture and equipment to the upper floors is designated for the use of civil defense personnel during emergency cases. This elevator is provided with electrical power from a backup source different than the feeding source.

Article (24)

Tracks for assembling coverings and clothing for laundries, and trash tracks:

1. Tracks openings shall be isolated in a private room in each floor. Tracks shall be designed with doors of its openings in front of the isolated room in accordance with specifications stipulated in Saudi Building Code.
2. The design and installation of tracks shall be in accordance with specifications stipulated in Saudi Building Code.

Article (25)

Requirements of bunkers:

1. It is required to provide bunkers in the underground floors with a capacity (not less than one-third of the building residents for a period not less than about 72 hours).
2. The bunker is designed and prepared to comply with the specifications of public bunkers issued by the General Directorate of Civil Defense under the classification (S1).
3. The building shall be designed with external wall bearing the sudden rarefaction pressure of (one air pressure) and its thickness not to be less than (30 cm) of reinforcement concrete.
4. The quality of bunker shall be upgraded from (S1) to (S3), If the building could be injured due to neighboring targeted vital facilities. Civil Defense shall decide the need to upgrade the level of bunker classification, otherwise classification S1 is the necessary classification.

5. Taking advantage of the bunker in normal times for the ordinary purposes and activities without being inconsistent with its actual purpose. It will be decided in agreement with the competent civil defense authority accountable for bunker so it could be converted within (26) hours at maximum to be utilized as bunker.

Article (20)

Airstrips of rescue helicopters:

1. Airstrips on the roofs of buildings shall be considered as a tool or part of evacuation methods in buildings.
2. The construction of helicopters airstrip on the roofs of buildings is considered an option for building owner. In the case of constructing an airstrip, it should be adhered with the engineering, technical specifications and protective requirements approved by competent authorities before General Authority of Civil Aviation / Air Command of Defense Civil)
3. The civil defense shall have the right to obligate owners of some facilities to construct airstrips, if seen as necessary.

Article (27)

Requirements for temporary evacuation floors:

If the building height is more than one thirty floor (31 floors) and more, evacuation floors shall be allocated under Table No. (1) With the following terms:

1. The specifications of evacuation floors (sheltering):

- a) Evacuation floor is not permissible for use than its actual purpose.
- b) The high of floor ceiling shall not be more than three meters.
- c) A natural or automatic ventilation shall be provided for the evacuation floor.
- d) The evacuation floor shall not contain any decorations or flammable furniture materials.
- e) The evacuation floor shall not be shared with the equipment of air conditioning and ventilation with other floors



- f) The elevators shall be opened thorough evacuation floor especially the elevators of firemen.

2. Equipment to be provided in each evacuation floor:

- a) Providing the protective necessary requirements same as other floors.
- b) Providing switch allocated for elevators.
- c) Provide (internal communication – Intercom) linked to the main surveillance and control room
- d) Provide easy-open box contains first aids for sufficient number of people. The aids to be examined monthly to check its validity.

Article (28)

Requirements for protection and prevention of lightning dangers:

Lightning rod shall be installed at the top of high-rise buildings and hazardous facilities according to specifications approved by the General Directorate of Civil Defense (public safety department) of technical specifications vary depending on the building.

Chapter 4
Final Clauses

First Article:

This regulation shall be effective as of publishing date at the formal newspaper.

Second Article:

This regulation shall supersede all contradicted resolutions and rules.

Third Article:

The regulations issued by virtue of this regulation may be appealed before the Grievances Board within (60 days) from notifying the relevant person with the resolution.



Table (1)

Determining numbers and location of evacuation floors with height exceeding (31) floors.

Number of Building Floors	Number of Evacuation Floors	Location (Floor No.)
31 – 41	1	21
42 – 61	2	21/41
62 – 81	3	21/41/61
82 – 101	4	21/41/61/81
102 – 121	5	21/41/61/81/101
122 – 141	6	21/41/61/81/101/121
142 – 161	7	21/41/61/81/101/121/141
162 – 181	8	21/41/61/81/101/121/141/161
182 – 201	9	21/41/61/81/101/121/141/161/181

