

# Fire Escape Regulations South Africa

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## 1 Introduction

This document is written to investigate the federal regulations of South Africa concerning fire emergencies. This is done to ensure that our software complies with these regulations. Only the legislation relevant to our software solution will be discussed in detail, with the other regulations will be discussed as an overview. South Africa has implemented building regulations to ensure that the buildings are designed, constructed and equipped adequately in the event of a fire.

## 2 Fire Protection Act

The Fire Protection Act states the following:

1. The occupants of the building, including disabled people will be protected;
2. The spread of fire within the building and to other buildings will be minimised;
3. Sufficient stability must be insured so there is no major failure of the structural system;
4. The spread of smoke shall be controlled and minimised; and
5. Adequate means of access for detecting, fighting, controlling and extinguishing shall be provided.

### 3 SANS Act

The SANS Act 10400 Part T can be divided into 4 categories

#### 3.1 Safety Distances;

Although there are other provisions, including the classification of the type of external wall, the table below may be used to establish safety distances where walls do not contain windows or other openings. For ordinary “dwelling houses” where the area of elevation facing any boundary is not more than 7,5 m<sup>2</sup>, such safety distance may be reduced to 0,5 m.

*Compliance with these standards are assumed for our system*

#### 3.2 Fire Resistance: Relating to building material such as structural walls.

There are several tables (five in all, not included since this is outside the scope of the project) that indicate requirements for compliance with “Presumed fire resistance of building materials and components”.

*Compliance with these standards are assumed for our system*

#### 3.3 Requirements for effective fire protection

The bulk of the Standard is made up of a vast number of different “requirements” that relate not only to dwelling houses, but to every other possible type of building, from hospitals to parking garages.

The requirements for effective fire protection include:

- General requirements,
- Regulations relating to safety distances,
- Fire performance
- Fire resistance
- Fire stability of structural elements or components,
- Protection of openings,
- **Provision of escape routes:** An escape routes is the designated route to a place of intended safety. This is where the System being designed provides support to the escape plan as a whole.
- Exit doors,
- Feeder routes,

- **Emergency routes, (Relevant to further discussion)** These routes are built with certain characteristics to meet the requirements of the SANSA act. These will be the routes that are assigned by the system.
- dimensions of components of escape routes,
- The width of escape routes,
- Basements,
- Stairways and other changes of level along escape routes,
- Ventilation of stairways in emergency routes,
- Pressurization of emergency routes and components,
- Openings in floors,
- External stairways and passages,
- **Marking and signposting, (Relevant to further discussion)** Under future expansion of the system we will be looking at interactive signposts, interfacing with the system during emergencies. But currently we will be using static sign posts to indicate to the user where the routes that can be assigned are.
- Provision of emergency lighting,
- Provision and maintenance of firefighting equipment,
- Water reticulation for firefighting purposes,
- Hose reels,
- Hydrants,
- Automatic sprinkler and other fixed extinguishing systems,
- Portable fire extinguishers,
- Mobile fire extinguishers,
- Protection of services shafts,
- Smoke control,
- Air-conditioning systems and artificial ventilation systems,
- Lift shafts,
- Lifts,
- Firemen's lift,
- Stretcher lift,
- Access for fire-fighting and rescue purposes

### 3.4 Rational Designs: Designing of a structure to ensure the level of safety is sufficient by a qualified person.

## 4 Escape plan

The purpose of emergency escape plans is to help building occupants orient themselves in relation to the planned escape routes. In this way, the escape plan complements the facility's emergency management arrangements. Escape plans are an integral part of a facility's system of safety signs and play an integral role in an employer/building owner's fire safety management plan. These plans are intended to be displayed as signs in public areas and workplaces.

The Western Cape Government provides a summary of setting up such a plan:

- **Be Prepared:** Regularly carry out a fire-risk assessment in the workplace by identifying any possible fire dangers and risks. Consider these five points when completing a fire safety risk assessment.
  1. Never lock or block fire exits or doorways, halls or stairways. Fire doors provide a way out and slow the spread of fire and smoke. Never prop stairway or other fire doors open.
  2. Learn your building's evacuation plans. Make sure everyone knows what to do if the fire alarm goes off. Plan and practise your escape plan. *This should be done both with using the RTFE system and manually to ensure that the company is prepared should there be a system failure.*
  3. Make sure your building manager displays evacuation routes in high traffic areas like passages. *This will be extended to displaying the multiple available escape routes from various locations, with the possible future expansion of smart signs*
  4. Know the sound of your building's fire alarm and display emergency numbers near all telephones.
  5. Know who is responsible for maintaining the fire safety systems. Make sure nothing blocks these devices and promptly report any sign of damage or malfunction to the building management.
- **Identify Fire Hazards**  
*This is taken into account by the system and affects the state of the system.*
  1. Sources of ignition.
  2. Sources of fuel.
  3. Sources of oxygen.
- **Identify People at Risk**  
*This will be done by the system identifying which users are in the building using sensors and the device id linked to the user on the system*

1. People in and around the premises.
2. People who are especially at risk.

- **Evaluate, Remove or Reduce and Protect Premises from Risk**

1. Evaluate the risk of a fire starting.
2. Evaluate the risk to people from a fire.
3. Remove or reduce fire hazards.
4. Remove or reduce the risks to people from a fire.
5. Protect people by providing fire precautions.

- **Record, Plan, Inform, Instruct, and Train**

1. Record any major findings and action you have taken.
2. Discuss and work with other responsible people.
3. Prepare an emergency plan.  
*This includes setting up the RTFE System with the relevant information*
4. Inform and instruct relevant people.  
*This will be extended to include instructing new users to download the application, and providing training on how to use the system*
5. Provide fire safety training.  
*This will include training on how to use the system. For administrators it will also include how to set up and/or remove users from the system.*

- **Review**

1. Review your fire-risk assessment regularly.
2. Make changes where necessary.  
*If any changes to the structure is made the system needs to be updated. Changes also will need to be made if a user needs to be added/removed or when a users information changes(place of work, or new device that needs to be linked)*

- **In the Event of an Emergency**

1. React immediately. If an alarm sounds and you see smoke or fire, or some other unusual disturbance, immediately exit the building and go to the assembly point.  
*This will be when the RTFE server responds to the emergency by sending push notifications to the users registered on the system.*

2. Get out and stay out. Once you have escaped, stay out. Under no circumstances should you ever go back into a burning building. Tell the fire department if you know of anyone trapped in the building. *The RTFE system has the location of users still trapped in the system which can be used by the fire department in case of someone still needing to be removed.*