



# Is Your Building Safe?

A quick guide to how to check it



*Bulging and loosening of wall tiles*

*Defective architectural fin*

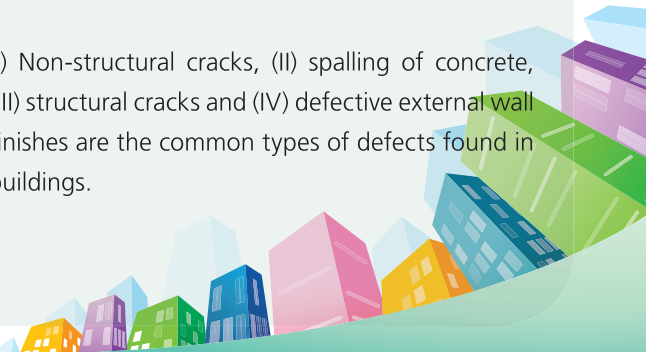
*Sootling of ... at ceiling*

The structure of a building refers to its framework which enables the building to stand on its own and to withstand the loading imposed on it, including that imposed by the occupants, furniture and wind. This framework includes the structural members such as beams, floor slabs, columns and load-bearing walls. Structural safety of a building is the integrity of the framework formed by these members.

To ensure structural safety of private buildings in Hong Kong is one of the prime objectives of the Buildings Department. This guide aims to introduce some common types of defects found on buildings and to advise members of the public on how a structurally SAFE living environment can be maintained in the simplest way.

## Survey on building defects

- ◆ Due to ageing and natural deterioration of the building fabric, many common types of defects are found on buildings. Some of the defects may affect the structural safety of the buildings while most of them are localised and non-structural in nature. Building owners or occupants should always be aware of the condition of their buildings.
- ◆ To avoid unnecessary panic, building owners should identify the symptoms, understand the possible causes of the defects and carry out timely repair and maintenance works to keep their buildings in good structural condition.
- ◆ (I) Non-structural cracks, (II) spalling of concrete, (III) structural cracks and (IV) defective external wall finishes are the common types of defects found in buildings.



## (I) Non-structural cracks

### Symptoms:

- Hair-line cracks
- Cracks that stretch to many directions (*cracks caused by shrinkage or contraction*)
- Cracks that appear between non-structural walls and structural members (*such as the interface between brick walls and reinforced concrete columns*)





*Fine cracks on wall*

## (I) Non-structural cracks

### Possible causes:

Hair-line cracks are commonly found on the surface of the wall. They do not affect the structure inside. The causes of these cracks may be due to shrinkage or contraction of the rendering on the walls or poor workmanship during construction. Another reason for the appearance of these cracks is the debonding of the rendering from the brick or concrete wall.





*Cracks on partition wall*

## (II) Spalling of concrete

### Symptoms:

- Stains of water or rust are found on the surface or there is seepage of water
- Cracks appear
- Spalling of rendering/ tiles
- The surface bulges and large pieces of concrete peel off, exposing the rusty steel bars







*Spalling of concrete at  
beam soffit*

## (II) Spalling of concrete

### Possible causes:

Spalling of concrete is usually found in ageing buildings. Prolonged seepage of water can damage the steel bars inside the concrete. When steel bars become rusty, they will expand and force the surrounding concrete to crack, resulting in spalling of the concrete.





*Spalling of concrete at ceiling*

### (III) Structural cracks

#### Symptoms:

- Cracks that penetrate the surface rendering into the structural concrete or load-bearing brick wall
- Cracks that appear on structural elements of buildings such as beams
- Long cracks that run across the wall
- Rusty stains that appear on the cracks
- Diagonal cracks that appear on the corners of window frames or door frames





*Cracks on the beam*

### (III) Structural cracks

#### Possible causes:

There are many causes of structural cracks, such as excessive movement of the structure of the building, subsidence of ground, overloading of structure, partial weakening of the structure of the building due to rusting or ageing of material, damage caused by accidents, improper design or construction.





*Cracks at the corner  
of door frame*

## (IV) Defective external wall finishes

### Symptoms:

- Debonding of finishes / tiles from the wall resulting in “hollow sound” when tapped with a hammer
- Cracking of the wall surface
- Bulging with a hollow base
- Falling off
- Loosening of finishing







*Bulging and loosening of wall tiles*

## (IV) Defective external wall finishes

### Possible causes:

The defects could be due to ageing, structural movements, poor workmanship during installation, thermal movement, inadequate expansion joints, damage by external factors (e.g. *falling objects during typhoon*), ingress of water into the gap between the finishes / tiles and the surface of the wall.





*Defective architectural fin*

### **Actions to be taken by Building Owners**

- When only non-structural cracks are noted, building owners should keep in view the conditions of the defects and, unless the circumstances have changed, owners may carry out repair as necessary.
- When spalling of concrete, structural cracks or defective external wall finishes are noted, building owners should arrange for timely repair and maintenance works to upkeep the building in good condition.
- If the defects are found within their own premises, the respective building owners should arrange themselves for the appointment of building professionals to coordinate repair of the defects.
- If the defects are noted in the common parts of the building, building owners should alert the owners' corporation/ management company for arranging the appointment of building professionals to coordinate the necessary repair works. The cost

should be borne by concerned building owners normally according to the shares stipulated in the deed of mutual covenant.

- Building owners who intend to carry out building repair works should consult building professionals on the appropriate action to be taken, including the appointment of Registered Contractors or Registered Minor Works Contractors for carrying out the necessary repair works. Registers of the registered building professionals/ contractors can be inspected at the Buildings Department's website <https://www.bd.gov.hk/en/resources/online-tools/registers-search/registrationsearch.html>.
- Good management of the building is the key to maintaining building safety. Building owners are therefore advised to appoint competent management companies to manage their buildings.



## Full Responsibility

- Building owners have full and ultimate responsibility to maintain not only their own premises but also the common parts of the building. Such responsibility is NOT released by just reporting the issues to the relevant government departments.

## Enquiry

- For any enquiry about this guide, you may contact the Buildings Department via the telephone hotline 2626 1616 (handled by “1823”).