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SINGAPORE STANDARD

Code of practice for waterproofing of reinforced concrete buildings

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Foreword

This Singapore Standard Code of Practice was prepared by the Technical Committee on Waterproofing of reinforced concrete buildings under the direction of the Construction Industry Practice Committee.

Leakages in buildings could affect the functional use of buildings and cause inconvenience to the occupants. Particularly under the local climatic conditions where there is high relative humidity and heavy rainfall, the building components that are prone to water seepage need to be adequately protected against rain water penetration and ingress of water. Careful considerations during the building design and construction stage are therefore essential to ensure water-tightness of the building.

The code recommends good engineering practice for the design, selection and installation of suitable types of waterproofing systems for reinforced concrete buildings in tropical climate. It covers prevalent waterproofing practices, systems and materials with due consideration given to the ease of application and site control.

The code recognises that the durability and effectiveness of the waterproofing of a building depends not only on the design and workmanship of appropriate waterproofing systems but also the design and construction of the building. The code therefore highlights relevant considerations in design and construction which would enhance the water-tightness and durability of the waterproofing system.

With the advent of new and improved waterproofing systems and products, the code hence intentionally provides the recommendations to be of sufficient detail and allow flexibility for adopting new and improved waterproofing practices.

The recommendations given in this code are not necessarily comprehensive. Particular project documents may need to cover recommendations not dealt with by this Code of Practice. Relevant publications or standards may also be referred to for waterproofing of special areas and structures not covered by this code.

Included in Annex A (informative) is a list of commonly available materials referred to in this code.

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

Code of practice for waterproofing of reinforced concrete buildings

Section One – General

1.1 Scope

This Code of Practice covers systems commonly used for waterproofing of reinforced concrete buildings. It contains sections on waterproofing of basement, floor, wall, roof and precast concrete element.

It provides guidance on waterproofing against water with or without hydrostatic pressure and against moisture from the ground.

NOTE – The titles of the publications referred to in this standard are listed at the end of the standard.

1.2 Introduction

Concrete is not always completely impermeable to water and may develop cracks after placement. It is hence sometimes necessary to cover the concrete surface with a waterproofing material.

Many waterproofing systems are available in the market. The decision on whether to use a specific waterproofing system and its selection should be made when the concrete structure is being designed.

There are many factors affecting the performance of various waterproofing systems such as method of placement, consolidation and curing of concrete. Surface cleanliness is also a major factor affecting adhesion and subsequent performance of the waterproofing system. Weather conditions such as rain, humidity and temperature can affect the quality of the application and subsequent performance of the barrier system.

It is important to recognise that the selection, placement, installation and inspection of a waterproofing system could be dominated by economic considerations. There may be a tendency to select and install a waterproofing system that has the lowest initial cost. This may result in lower performance standard. In addition to initial cost, attention should be given to the cost of repairing or replacing a waterproof system failing prematurely and to other costs associated with the failure.

The application of a waterproofing system requires extreme care and strict adherence to the manufacturer's recommended procedures. Poor or careless workmanship would result in leaks that are difficult and costly to repair.

Waterproofing works should be carried out by a qualified applicator. Care should be taken to ensure that the surface preparation and application of waterproofing systems are in accordance with manufacturer's specifications. Where a barrier system is used, inspection should commence before the barrier is installed and the final inspection should be made after the barrier has been placed.

1.3 Concrete surface preparation

The performance of waterproofing systems depends very much on proper surface preparation. Concrete surface receiving the waterproofing system should be cleaned or repaired by removing surface contamination or defects. The concrete surface can be prepared by cleaning with water, chemical or mechanical cleaning methods.