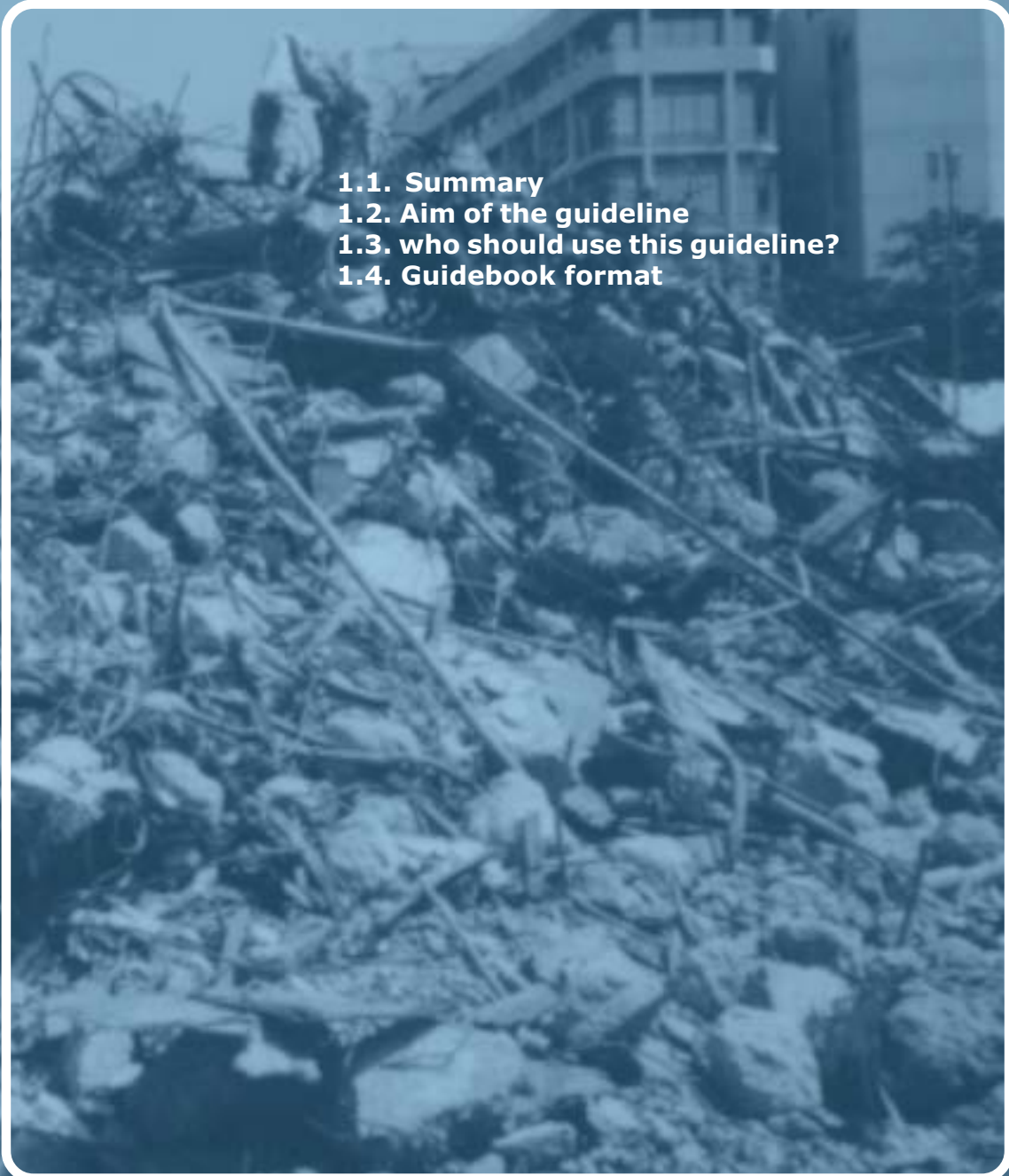




Introduction

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- 1.1. Summary**
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1.1. Summary

The construction industry in Hong Kong generates a huge quantity of C&D waste. In 2000, as much as 37,690 tones per day of C&D waste was generated of which 30,210 tones per day (80%) was transported to public filling areas for reclamation use, and 7,480 tones per day (20%) was disposed of at landfills. Hong Kong will soon be running out of both landfill space and public filling areas.

This guidebook, which is the result of research carried out by the Department of Civil and Structural Engineering of the Hong Kong Polytechnic University, presents ways to reduce the generation of C&D waste at the design stage. It includes design measures and concepts to delay the generation of demolition waste from existing buildings, to optimize the building life of new construction and also to minimize waste arising from construction. It considers also material selection and construction method selection.

This guidebook provides a global concept to apply waste minimization at the design stage and shows examples and case studies in Hong Kong as well as overseas. All parties involved in the building process such as clients, designers, architects, engineers, contractors and developers should consider waste minimization at an early stage of projects.

Keywords In alphabetic order:

Construction and demolition waste (C&D waste), construction materials, construction methods, design, minimization, recycling, reduction, reuse and salvage.

1.2. Aim of this guidebook

The aim of this guideline is to help designers understand the situation of C&D waste management in Hong Kong, and to consider waste minimization issues at the design and early stages of project developments. It proposes design concepts and measures to encourage the building industry to reduce the generation of C&D waste by carrying out efficient designs for building projects. It considers the design of new building constructions as well as renovations of existing ones.

As architecture and design constraints are complex in dense mega-cities such as Hong Kong, this guideline only outlines a methodology, and a global concept of waste minimization, that needs to be adapted case by case, depending on the project type and location.

The objectives of this guideline are:

- To sensitize and raise the awareness of Hong Kong's building industry towards the situation of C&D waste.
- To help develop better information and communication within all parties involved in the building processes with regard to waste management.
- To improve building design in order to minimize waste and propose adequate solutions for Hong Kong's situation.
- To consider the waste generation issue and waste minimization early at the design process, and to include it as a goal throughout the whole building process.

Important This guideline only deals with C&D waste and proposes solutions for waste minimization that might not be the most environmentally friendly options. Therefore it is important to consider the waste issue as part of the sustainable design when considering design concepts, material and construction methods selection. For effective design and results, the waste minimization issue should not be isolated but included in the sustainable design concept. For example, when specifying a recycled material, the designer should consider the best environmental option, which might not always be the specified recycled material, depending on the project. For further information on other environmental concerns, a series of guidebooks are listed at the end of this publication (see "references") for proper guidance.

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1.3. Who should use this guidebook?

This guideline has been designed for designers involved with: feasibility studies, conceptual design, primary design choices, detailed design in the design office, detailed design on site, design of building products, preparing the construction process, design of the construction process, preparing and managing contracts.

Therefore it includes all parties involved in the building process such as engineers, architects, clients, developers, contractors, builders, suppliers and construction project managers.

The term "designer" used in this guidebook refers to architects, engineers and other professionals that have contributed at the design stage.

1.4. Guidebook format

The format of this guidebook is displayed similarly for chapter 4 "Design to minimize waste", chapter 5 "Material selection to minimize waste" and chapter 6 "Construction method selection to minimize waste".

Each chapter includes pages with text, photos and case studies. The text is organized as below:

10

A short text description introducing the subject.

Objectives

The aims of the chapter.

Waste Type

The types of waste generated on site due to lack of waste minimization principles considered.

Strategies

Design measures and approaches to consider waste minimization action at the design stage.

Benefits

The benefits that can be appreciated when considering the strategies mentioned above. The benefits are organized in three categories: cost, environment and others.

Cost

Environment

Others

Regulation

Usage of the British Standards, PNAP and PNRC in Hong Kong.

References

The references are split into three categories: books, journals (which includes reports and articles) and web sites. All references are also listed at the end of this guidebook in chapter 8 "End pages".

Books

Journals

Web sites

Other references


Inside

Refers to other chapters in this guidebook related to the subject.

Outside

Refers to other references outside this guidebook and includes books, journals, reports, articles and web sites.

Text and Photos



4.5

4.5.1. Proper maintenance of the building

According to a survey conducted in 2004, by the Government of Odisha and the Department of Urban Planning, Housing and Infrastructure, Odisha, the main reasons for the poor condition of a building, after construction, are in the following order: Poor quality of work, poor quality of materials used, poor maintenance, but ranked first by lack of proper maintenance.


Observation Insufficient proper maintenance of buildings is termed the main reason and other secondary of buildings by previous researchers.

Problem type Lack of proper maintenance of buildings is termed the main reason and other secondary of buildings by previous researchers.

Observation Insufficient proper maintenance of buildings is termed the main reason and other secondary of buildings by previous researchers.

Conclusion Proper maintenance is essential for the long life of a building. It is not only a matter of aesthetics but also a matter of safety. It is a matter of safety and health of the building. It is a matter of safety and health of the building. It is a matter of safety and health of the building.

Text and Photos



4.6

4.6.1. Proper maintenance of the building

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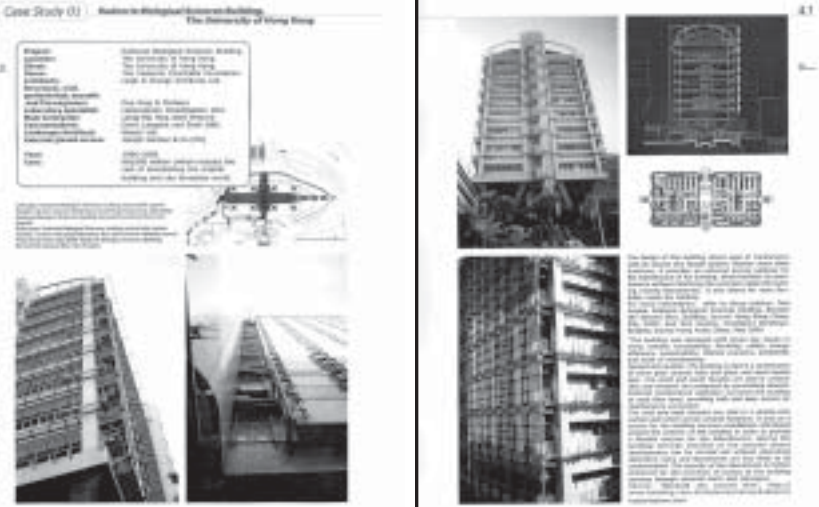
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Case Study

Case Study (1) - Modern High-Rise Building

4.7



4.7.1. Proper maintenance of the building

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