

# 既有建築物地下室拆除重建工法之研究

## Research on the Construction Method of Demolition and Reconstruction of the Basement of Existing Buildings.

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### 摘要

都會區既有建築物地下室拆除重建日益普遍。重建時既有建築物遺留之地下構造物若直接破除會擾動地層，造成基地塌陷與鄰房損壞之事故發生。本研究的目的為彙整分析國內外既有地下室拆除重建之施工案例，分析施工過程面臨之施工課題及工法。

本研究以文獻蒐集回顧分析、專家座談、案例工法等進行研究，並實際參訪施工中工地。本研究之發現包括：

- 地下室拆除重建事前應對既有地下構造物及地質進行詳細的調查、檢討建築設計與既有地下構造物的關係，必要時調整設計或變更計畫，以利用既有地下構造物、或避開施工困難處。
- 建築計畫設計完成後，在施工過程中可能浮現而導致計畫變更的問題包括：既有地下室回填營建廢棄物、或既有結構體梁柱被破壞而倒導致施工面上承載施工機械的載重不足問題；既有連續壁的垂直度、內擠變形問題。
- 既有地下構造物的利用可分為三種類別，分別為 1.既有連續壁含擋土排樁的利用方式，2.既有地下室本體結構，包含梁柱版牆等構造的利用方式，3.既有地下基樁利用方式，基樁強度足夠可以留存，強度不足應考慮拔除或原地保留廢除。
- 既有地下室回填課題，1.回填材料若為營建工程廢棄物，需將其挖除另行回填適當材料，因而會增加造價與工期。2.施作連續壁、反循環樁時，穩定液易從回填物空隙流失，因而需要施作與舊地下室同深度具水密性之深導溝或井筒構造。

**關鍵詞：**既有地下室、既有地下構造物、拆除重建、連續壁、深導溝

## Abstract

Demolition and reconstruction of existing buildings' basements in metropolitan areas is becoming more common. Due to the high density of buildings, if the existing underground structures are directly destroyed, the soil will be affected, causing soil collapse and damage to neighboring buildings. The purpose of this research is to study the cases of the demolition and reconstruction of existing basements, and analyze the issues and solutions in the construction process.

The research methods include cases study, literature review and expert discussion. This research focuses on the construction phase of demolishing existing underground structures to implement new diaphragm walls and foundations. Results of this research include:

- The issues that may arise during the construction process and lead to design modifications include: insufficient strength of existing underground structures for bearing the weight of construction machines and existing diaphragm wall' s verticality and lateral squeeze deformation problems.
- There are three types of utilization of existing underground structures: 1. The utilization of existing retaining walls; 2. The utilization of existing basement structures (columns, beams, slabs and walls); 3. The utilization of existing pile foundations.
- If the backfill material is construction waste, it needs to be removed and refilled with appropriate materials, which will increase the cost and construction period.

**Keywords : existing basement, existing underground structures, demolition, reconstruction, diaphragm wall, deep guide wall.**