超高層大樓壁樁前期載重試驗內容與成果之應用--以機場捷運臺北站(A1站)共構聯合開發大樓工程為例

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摘　要

台灣桃園國際機場捷運線 A1車站與C1基地56層及D1基地76層聯合開發大樓共構，為提供後續聯開大樓深基礎設計所需之參數，規劃於連續壁及壁樁工程中先行進行2組壁樁前期載重試驗及1組前期拉拔試驗。

本次前期載重試驗主樁尺寸為1.3m x 2.7m x 52m，利用電子式荷重計、電子位移計、鋼筋應力計、樁體變位計、自動化測讀設備等儀器，於每階段加載時所規定之時間擷取試驗數據資料，配合各儀器所埋設位置，計算每一節樁身分段之軸力傳遞與摩擦力分佈狀況，以及每一地層之摩擦應力發揮與變位關係之t-z曲線、承載層反力發揮與變位關係之q-z曲線等成果，提供作為進行不同尺寸壁樁承載力與載重－沉陷量關係之回饋分析計算之用。

本文將針對2組載重試驗之規劃、儀器配置、數據分析與設計參數整理進行介紹，並以C1/D1聯合開發大樓深基礎設計為例，說明壁樁前期載重試驗成果之應用。

關鍵字：自動化測讀儀器、軸力與摩擦力分佈、t-z 及 q-z 曲線、回饋分析。

Taiwan Taoyuan International Airport Access MRT System A1 Station & C1/D1 Relevant Development Building Pile Foundation Preliminary Loading Test Content and Application

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Abstract

Taiwan Taoyuan international airport access MRT system A1 station and relevant development building is located on Parcel C1, D1. In order to provide the design parameter of high building's deep foundation, performing preliminary loading test in diaphragm wall and pile engineering contract.

The scale of test pile is 1.3mx2.7mx52m, the automatic electric instruments including load cell, LVDT, installed in testing pile reinforcing bar stress transducer, telltale etc. had been measured by computer and data logger at indicated time for every step of loading. The load transfer and friction development of pile and stratum t-z & q-z curve may be calculated using the data from every instrument. The result of loading test could be applied in feedback analysis for different scale of pile bearing capacity and settlement analysis for C1/D1 relevant development building pile foundation.