

捷運潛盾隧道通過橋臺基樁及廢棄污水幹管 人孔擋土結構之處理案例

汪安邦 林煒僑 蘇啟鑫
中興工程顧問股份有限公司

王世章 許明新
臺北市政府捷運工程局中區工程處

摘 要

捷運地下隧道採用潛盾機施作，為目前都市隧道最安全經濟工法之一，但都市地下管線、高架橋基礎、地下道等地下結構物日益增加、且漸趨複雜，因此都市潛盾隧道遭遇到地下障礙物的問題將會愈來愈多。地下障礙物若未能在潛盾隧道設計階段詳細調查、並於施工前妥善規劃處理，將可能危及潛盾隧道施工，因此地下障礙物調查及處理是潛盾隧道施工前的重要課題。

本文以臺北捷運松山線尾軌潛盾隧道施工案例，說明潛盾隧道遭遇到橋臺基樁及污水幹管人孔擋土結構等地下障礙物之處理方式。本案例主要採用全套管搖管機切削並清除地下障礙物，初期以全套管搖管機配合重錘及抓斗方式清除，後期因地下障礙物離鄰房較近，改採用全套管搖管機直接切削地下障礙物，以降低施工振動及噪音，避免造成居民困擾。

關鍵字：全套管、橋臺、污水人孔、搖管機。

Case Study of an MRT Shield Tunnel Passing Through Abutment Piles and Retaining Walls of Sewage Manholes

An-Pang Wang Wei-Chiao Lin Chi-Hsin Su
Sinotech Engineering Consultants, Ltd.

Shin-Jhang Wang Ming-Hsin Hsu
Department of Rapid Transit Systems, Taipei City Government

Abstract

Mining an MRT underground tunnel by using a shield machine is one of the most secure and economic methods for urban tunnel construction. Increasing the number of underground pipelines, viaduct foundations, underpasses, and other underground structures makes urban shield tunnel construction more challenging. Shield tunnel construction may be more difficult and time consuming if the underground structures and obstacles are not designed properly or if investigations are conducted before construction. Therefore, mitigating underground obstacles is crucial for shield tunnel construction.

The construction cases of the Songshan Line tail rail shield tunnel indicated that shield tunneling encountered underground obstacles and structures. This case used an all-casing pile oscillator for cutting and removing underground obstacles. Initial cutting and removing were performed using the grab and hammer, respectively, and the latter involved using an all-casing pile oscillator for cutting and removing obstacles directly to reduce vibration and noise.

Key Words : all casing pile, abutment, sewage manhole, all-casing pile oscillator.