

# Hong Kong - Shenzhen Western Corridor/Deep Bay Link Piling Works

The Hong Kong-Shenzhen Western Corridor and Deep Bay Links projects together form the new cross-boundary vehicular route which is over 8 km long mainly on viaducts. The works are constructed under three main contracts that commenced in mid-2003. After some 8 months into the construction period, the contractors are fully engaged in the piling works for the viaducts. As the programme for completion is tight, the bulk of the piling works has to be finished in the first fifteen months.

The scope of the piling works is extensive. There are over 1,000 bored piles in the Deep Bay Link contracts and nearly 500 in the Hong Kong-Shenzhen Western Corridor. Most of the piles in the latter contract are marine piles. The pile diameters are mainly 1.5m for slip roads, 2.2m for main line and 1.8m for marine piles. The depths of the piles are mostly between 20m and 40m, but they can reach up to 65m near Castle Peak Road and over 80m at some areas at Deep Bay.

To meet the tight programme, and to enable the timely commencement of viaduct deck construction, the contractors have so far mobilized a total of 42 sets of piling rigs on site. It is likely that this figure will increase as the construction rate continues to rise.

It may appear that the piling works are resource-driven activities where progress can be expedited by increasing construction plant. There is however a complication in that the Environmental Permits place constraints on the number of concurrent piling work-fronts at each area to limit noise disturbance to nearby residents or the discharge into Deep Bay waters. These constraints necessitate careful planning of the works to maintain progress and to meet the Permit conditions at the same time.

For land-based bored piling, mitigation is necessary for environmental impacts such as noise and waste generation, marine bored piling requires additional effort to contain impacts on the environmentally sensitive water quality of Deep Bay. To avoid sediment dispersion affecting water quality during marine piling, excavation by closed grab is adopted and carried out in cofferdam, outer casing or silk curtain. Water used in drilling and concreting is desalted, treated and recycled using a system of water treatment tanks.

The progress of the piling is closely monitored against the programme. It is equally important to closely supervise and monitor regularly the environmental aspects of the piling works. Marine piling operatives are given special training in handling works in compliance with environmental needs and contingency and emergency procedures. The environmental control system of piling works has so far proved successful.

# 深港西部通道／后海灣幹線打樁工程

的一條車輛跨界通道，由深港西部通道和后海灣幹線兩個項目組成。通道長約 8 公里，大部分為架空道路。工程分 3 份主要合約批出，並已於 2003 年中動工。經過 8 個多月，承建商正全面進行架空道路的打樁工程。由於工程時間緊迫，大部份地基樁柱需在工程首 15 個月內建成。

打樁工程規模龐大。后海灣幹線兩份工程合約要建造過千支鋼筋混凝土鑽孔樁，而深港西部通道則有近 500 支。後者大部份在海中建造。樁柱直徑大致分為：支撐支路的 1.5 米，支撐主要幹道的 2.2 米及海中的樁 1.8 米。大部份樁柱深度是 20 至 40 米。青山公路一帶及后海灣水域個別位置樁柱深度可達 65 米及 80 米以上。

為了配合施工計劃及使架空橋板工程如期動工，承建商至今共動用了 42 套打樁機械。這數字極有可能因應工程進度而繼續增加。

在表面上，打樁工程的進度應該可以靠增加器械而提升。這方面事實上卻受環境許可証的約束。許可証的某些條款限制了在同一位置同時進行打樁工程的機械數目，從而控制對附近民居的噪音及於后海灣水域的污水排放。工程的工序因此必需小心安排才可達到目標的進度而又不致違反許可証的規定。

位於陸地的鑽孔樁工程在噪音及廢料處理等方面均需要紓緩措施來減低環境影響，海上的鑽孔樁工程則更要加強紓緩工作來避免對后海灣水質及其生態價值的影響。這方面，挖掘海樁是使用密閉抓斗式挖泥機，在圍堰，外層套管及隔泥幕內進行，以防止沉澱物外溢。鑽孔和灌注混凝土產生的污水會用處理系統沉澱，調節及循環再用。

我們除了緊密監察打樁工程的進度，亦嚴緊地監督及監察相關的環境保護工作。海上打樁的工作人員都曾受特別訓練，處理環保措施及意外緊急應變計劃。目前打樁工程的環保措施運作十分順利。



Marine Bored Piling 海上鑽孔樁工程