



簡介 Introduction

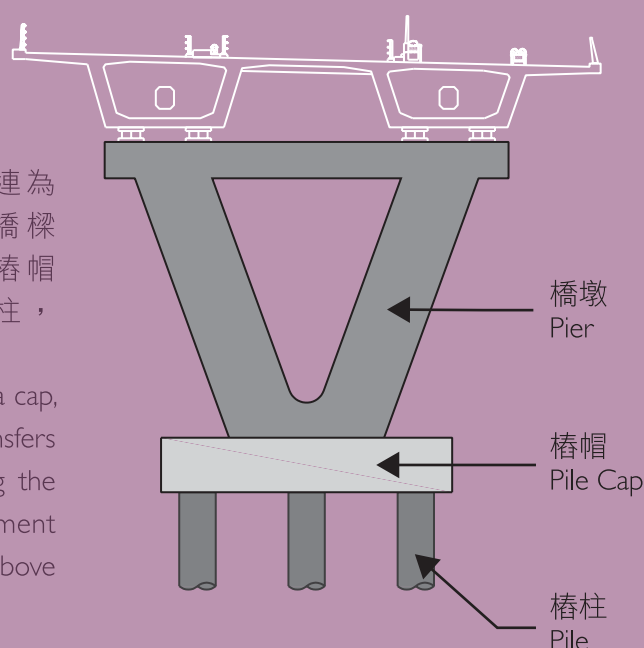
將軍澳跨灣連接路工程項目(跨灣連接路)包括興建一條橫跨將軍澳灣總長度約為1公里的海上高架橋。海上高架橋的建造工序依次為海上地基工程、樁帽建造、橋墩建造及橋面裝嵌，當中海上地基工程包括前期鑽探及鑽孔樁工程。上期已介紹海上地基工程，今期主要介紹樁帽建造的工序。

The Cross Bay Link (CBL), Tseung Kwan O project comprises among others construction of an about 1-kilometre long marine viaduct across Junk Bay. The construction sequence of the marine viaduct mainly involves marine foundation works, pile cap construction, pier construction and bridge deck installation. Marine foundation works comprise pre-drilling and bored-piling works. The marine foundation works were introduced in the last issue. The process of constructing pile cap will be mainly introduced in this Newsletter.

樁帽 Pile Cap

顧名思義，樁帽將數支地下樁柱戴上帽子，把樁柱連為一體，以連接橋墩和樁柱，將橋樑本身的重量和橋樑所荷載的重量包括汽車重量、風力等轉移至樁柱。樁帽由鋼筋及混凝土製作而成，為免船隻撞向樁帽和樁柱，在設計上樁帽會露出水面，容易讓船長看見。

As the name implies, a group of underground piles are united by a cap, providing a linkage between pier and a group of piles. Pile cap transfers weight of bridge together with loadings on the bridge including the weight of vehicles, wind load, etc. It is made of steel reinforcement and concrete. Under CBL, pile caps are designed to be exposed above sea level to be visible to coxswains to avoid collision from vessels.



跨灣連接路現時已於將軍澳灣安裝數個
 樁帽殼，重約177至440噸。
 CBL has installed several pile-cap shells at Junk Bay. Their weights range from 177 to 440 tonnes.

樁帽殼 Pile-Cap Shell

樁帽殼是樁帽的外殼，形狀似水缸，
 旨在防止海水滲入，並提供一個乾爽的空間，
 以便在海中建造樁帽。

Pile-cap shell is the outermost shell of pile cap. It looks like a water tank. It is constructed to prevent seepage of seawater and provide a dry environment for its construction.



製造樁帽殼 Fabrication of Pile-Cap Shell

本工程項目的樁帽殼於國內預製件廠房製造，工序如下：
 The pile-cap shells of this project are fabricated at an off-site yard in the Mainland. Processes are listed below:



正在進行樁帽殼扎鐵工序
 Fixing steel bars for pile-cap shell

1



已完成的樁帽殼準備由預製件廠房
 運往香港地盤進行安裝
 The completed pile-cap shell will be
 delivered from off-site yard to Hong
 Kong for installation

4



灌注混凝土
 Placing concrete

2

3



運用自動灑水系統進行混凝土養護工序
 Using automatic sprinkler system for
 concrete curing works

運送樁帽殼 Delivery of Pile-Cap Shell

樁帽殼完成生產及檢查後會安排吊上躉船，然後運送至香港將軍澳灣海上地盤進行安裝。
The completed pile-cap shells would be delivered by barge to the construction site at Junk Bay, Hong Kong for installation.



工人於樁帽殼內加上吊眼，以便進行吊運
Installation of lifting eyes on pile-cap shell for lifting

已完成的樁帽殼被吊上躉船，準備由預製件廠房運往香港地盤進行安裝
The completed pile-cap shells are loaded to a barge at off-site yard and then delivered to Hong Kong for installation



承載樁帽殼的躉船正前往將軍澳灣
The barge carrying the pile-cap shells is on its voyage to Junk Bay

安裝樁帽殼 Installation of Pile-Cap Shell

當樁帽殼運抵將軍澳灣後，工人會安排吊桿躉船，將樁帽殼固定在樁柱上。固定後，工人會在樁帽殼內放置混凝土磚，以穩定海樁及防止帽殼浮起。

由於樁帽殼置於海上，為防止海水進入樁帽殼內，因此需要

為樁帽殼進行排水工作，以免影響其後的樁帽澆鑄工序。

When the pile-cap shells are delivered to the construction site at Junk Bay, it would be lifted by derrick lighter and fixed on the pile group. Counterweight concrete blocks would be placed inside the pile-cap shell to provide stability and guard against floatation.

As the pile-cap shell is exposed to seawater, it is a must to conduct dewatering works to provide water-tight environment for the next step of casting of pile cap works.

工人運用吊桿躉船把樁帽殼放在樁柱上
Placing of pile-cap shell by using derrick lighter



1
↓
2



把樁帽殼固定在樁柱上
Fixing the pile-cap shell on the pile group

工人正灌漿填滿樁柱與樁帽殼之間的縫隙
Worker is sealing the gaps between pile-cap shell and pile casings



4
↑
3



在樁帽殼內放置混凝土磚，以穩定及防止樁帽殼浮起
Placing counterweight concrete blocks to provide stability and guard against floatation



1

澆鑄樁帽 Casting of Pile Cap

完成樁帽殼安裝後，現場會進行樁帽澆鑄工程。工人於樁帽殼內扎鐵，隨後澆灌混凝土。
Casting of pile cap commences after installation of pile-cap shell. Reinforcement bars are fixed inside the pile-cap shell. Concrete will then be placed.

於樁帽殼內扎鐵
Reinforcement bars are fixed inside pile-cap shell



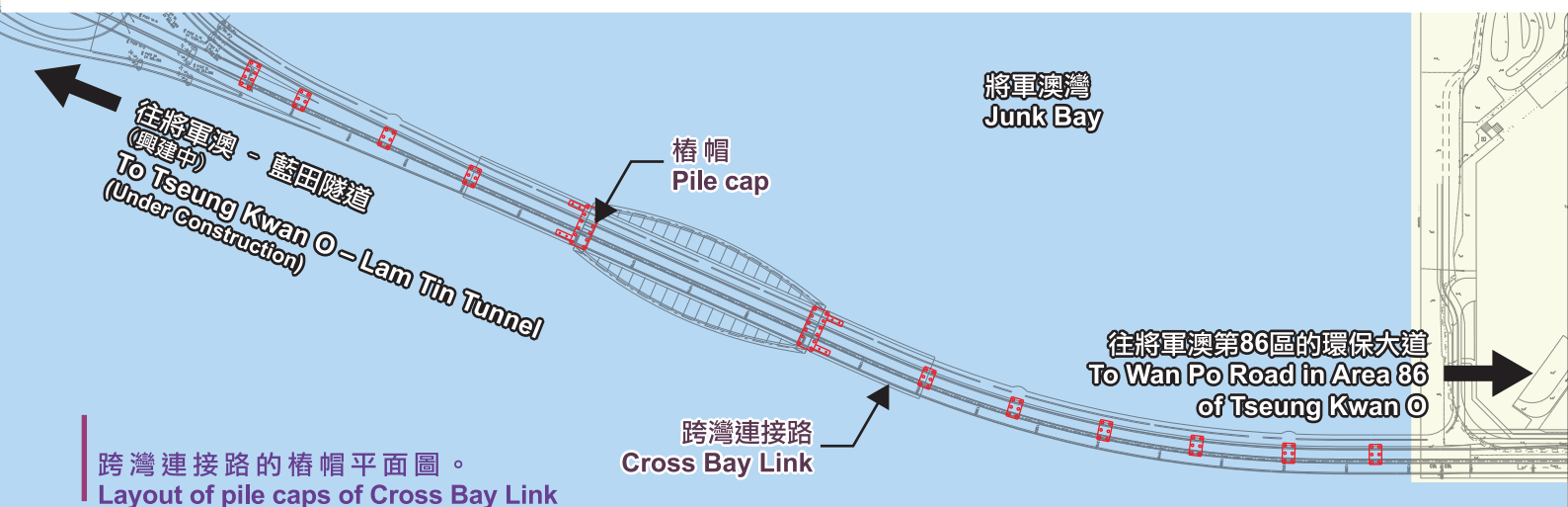
2

澆灌混凝土
Placing concrete for pile cap



3

部份完工的樁帽
Partially completed pile cap



跨灣連接路的樁帽平面圖。
Layout of pile caps of Cross Bay Link

工程小知識

Knowledge of Construction

高壓水力清洗技術

Use of Hydro-demolition Technique

在進行樁帽工程前，要將樁頭的混凝土打碎，以露出鋼筋。傳統上會使用鑽機將樁頭的混凝土打碎，而本工程項目採用了高壓水力清洗技術，運用高壓水力噴射器來打碎樁頭的混凝土，這技術有以下好處：

- 減少因鑽機震動而影響結構
- 減少鑽機損壞鋼筋
- 減少塵埃

Before construction of pile cap, the concrete at pile heads has to be removed to expose steel bars. Traditionally, milling machine is used to break concrete at the pile heads. This project adopts hydro-demolition technique using high pressure water jet to remove the pile head concrete. It offers numerous benefits as follows:

- Eliminate vibration to the surrounding structure
- Reduce damage of reinforcement bars
- Minimize dust



使用高壓水力清洗技術將樁頭的混凝土打碎，以露出鋼筋
Hydro-demolition technique is used to remove the pile head concrete so as to expose steel bars



已完成高壓水力清洗的樁頭部份
Pile head after completion of Hydro-demolition

香港主水平基準

Hong Kong Principal Datum (HKPD)

在比較兩個地點的高度時，必須以同一個基點來量度，這一個基點的參考數就是香港主水平基準。現時，香港所有建築物的高度均使用香港主水平基準來表示，例如透過比較路面與建築物最高點的高度差距，便可以知道建築物距離地面的高度。

將軍澳跨灣連接路的最高點為主水平基準以上約67米，環澳路的路面高度為主水平基準以上約5米，這表示跨灣連接路的最高點較環澳路高約62米(即約20層樓的高度)。[註：海面在主水平基準以上約0至2.5米。]

The difference of elevation between two locations must be measured with reference to the same datum. This datum is known as Hong Kong Principal Datum (HKPD). The height of buildings in Hong Kong uses HKPD for reference. For example, the difference of the highest point of a building and road surface indicates the height of the building from the ground.

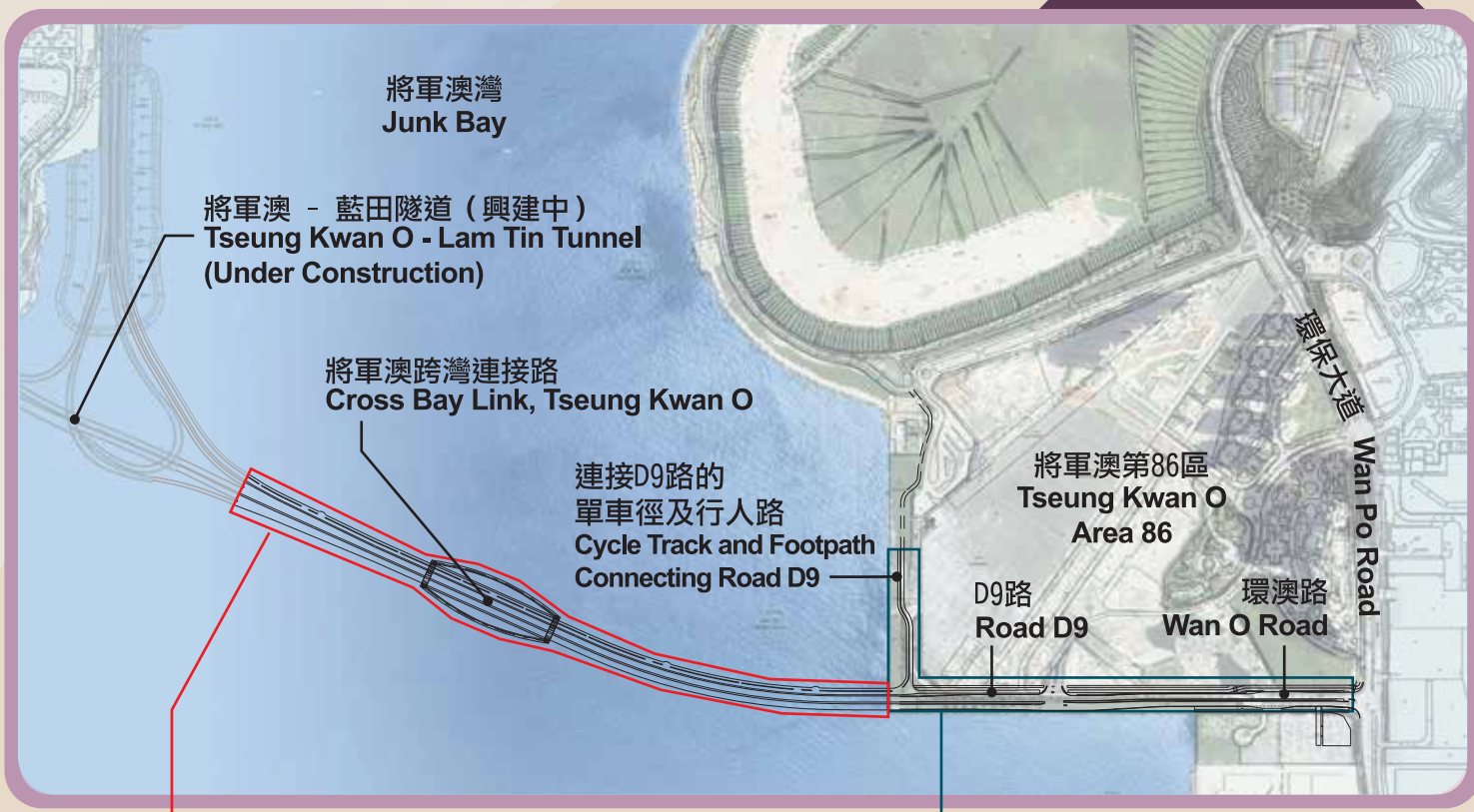
The highest point of Cross Bay Link (CBL) is approximately +67mPD and the road surface of Wan O Road is approximately +5mPD. That indicates the highest point of CBL is approximately 62m higher than Wan O Road (approx. height of 20-storey building). [Remark: Seawater level is about 0 to +2.5mPD.]

環澳路
Wan O Road
+5mPD

將軍澳跨灣連接路最高點
The highest point of CBL
+67mPD



工程進度 Project Progress



主橋及相關工程 (合約編號：NE/2017/07) Main Bridge and Associated Works (Contract No : NE/2017/07)



樁帽澆鑄
Casting of pile cap



鋼板製造
Fabrication of steel panels

海上地基工程已大致完成，現正展開樁帽殼安裝及樁帽澆鑄工程，同時於國內預製件廠房為海上高架橋製造混凝土和鋼板組件，機電工房的建造工程亦進展順利。

Marine foundation works were substantially completed. Installation of pile-cap shells and casting of pile caps are in progress. Meanwhile, concrete and steel components of the marine viaduct are being fabricated at off-site yards in the Mainland. The construction of E&M plant room is in good progress.

D9路及相關工程 (合約編號：NE/2017/08) Road D9 and Associated Works (Contract No : NE/2017/08)



D9路地基工程
Foundation works at Road D9



D9路臨時交通措施
Temporary Traffic Arrangement at Road D9

現時正在D9路進行地基工程。為配合道路建造工程，現計劃於2020年1月起全面圍封環澳路。Foundation works at Road D9 are in progress. It is planned to close Wan O Road with effect from January 2020 to facilitate construction of at-grade road.

資訊與聯絡

Information and Enquiries

如欲知詳情，請瀏覽「將軍澳跨灣連接路」的工程網頁：
For further information, please visit
the Cross Bay Link, Tseung Kwan O's project website:

www 工程網頁：
Website

www.cbltko.hk



歡迎提出意見及建議。

Your views and comments are welcome.

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Community Liaison Centre

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7 Chui Ling Road, Tiu Keng Leng,
Tseung Kwan O

開放時間
Opening Hours

星期一至五
Mon to Fri
09:00 - 19:00

星期六
Sat
10:00 - 15:00

星期日及公眾假期
Sun and Public Holiday
休息 **Closed**



編者的話：

春節即將來臨，我們工程團隊祝願大家新年快樂、身體健康。在新的一年，希望工程順利進行，早日改善將軍澳區內的交通。

From the Editor:

With the Chinese New Year is just around the corner, we wish you all Happy New Year and Good Health. In the New Year, we hope that the project will proceed smoothly and improve the traffic in the Tseung Kwan O area in the near future.