中九龍幹線通訊

Central Kowloon Route Newsletter

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Highways Department

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通告 Message

在過去的通訊，我們簡介了在中九龍幹線的三種隧道建築方法，包括深層鑽挖式隧道、明挖回填式隧道及沉管式隧道。在今期通訊，我們會提供有關深層鑽挖式隧道及沉管式隧道的資料。

In the previous issues, we have mentioned CKR will consist 3 different kinds of tunnel construction, namely, bored tunnel, cut-and-cover tunnel and immersed tube tunnel. More detailed information regarding the construction of bored tunnel and immersed tube tunnel is discussed in this issue.

中九龍幹線 深層鑽挖隧道

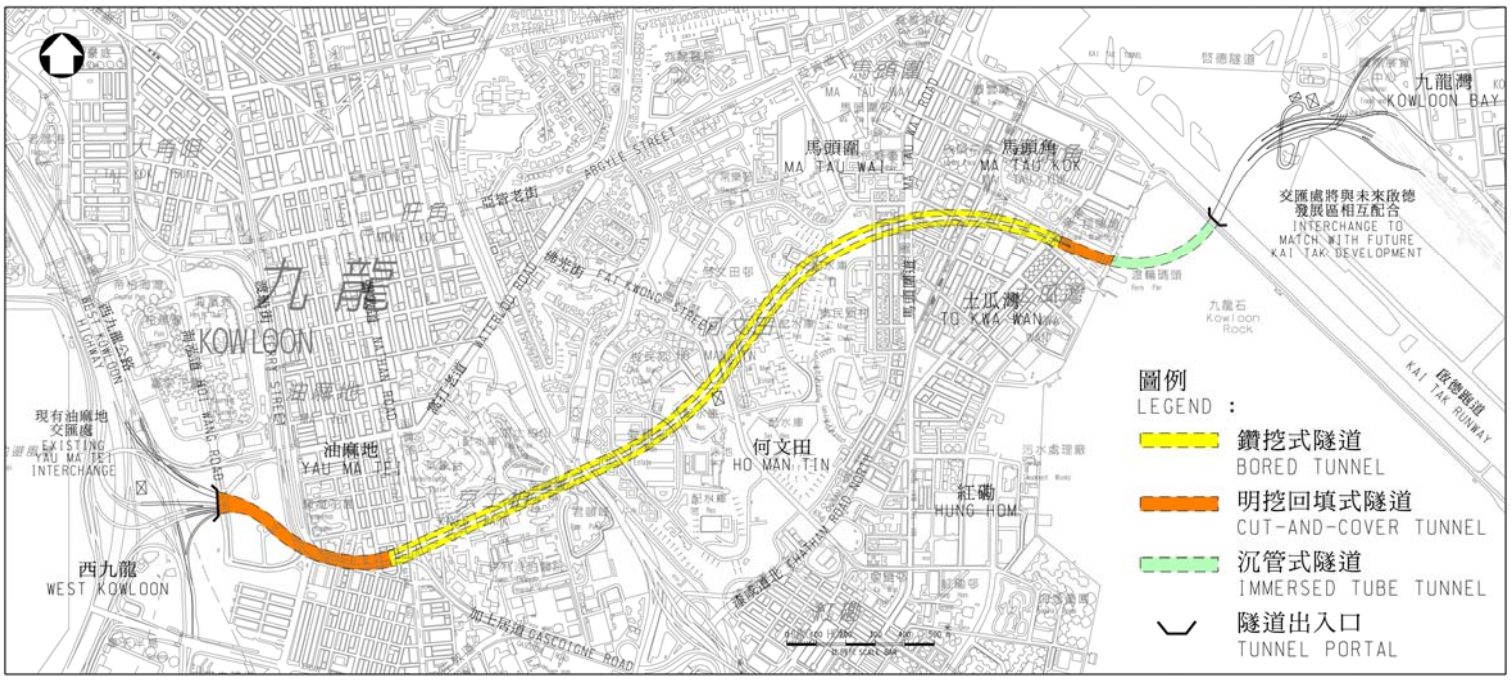
Central Kowloon Route Deep Bored Tunnel

中九龍幹線的隧道部份全長3.9公里，當中約2.7公里爲深層鑽挖隧道。深層鑽挖方法適用於地底岩石層內興建隧道。現時，一般都使用隧道鑽挖機及鑽挖爆破法兩種普遍方法，來建造深層鑽挖隧道。

中九龍幹線的深層鑽挖隧道，將會是雙管各3線隧道。經工程顧問的勘測研究，中九龍幹線將會採用鑽挖爆破法來興建深層鑽挖隧道。鑽挖爆破工程會於離地面三十米至百多米的地底岩石層內進行。除了環境影響評估外，爲確保附近樓宇及建築物的安全， 我們會進行爆破工程評估，詳細研究爆破工程的各項細節，及計劃工程進行時各項所需措施。

The total length of tunnel section of Central Kowloon Route (CKR) is 3.9km with about 2.7km long of deep bored tunnel. Deep bored tunneling method is suitable for constructing a tunnel underlying rock strata below ground. Currently, there are two common methods – using Tunnel Boring Machines (TBM) or “drill and blast” method.

The deep bored tunnel of CKR will be a dual 3-lane tunnel. With the investigation study conducted by the Engineering Consultant, “drill and blast” method is adopted to construct the deep bored tunnel. “Drill and blast” works will be carried out in an underlying rock strata below ground ranging from 30m to over 100m. In addition to Environmental Impact Assessment, to ensure the safety of the nearby buildings and structures, we will conduct a blasting assessment to examine the blasting works in detail and to plan various procedures to facilitate the construction.



中九龍幹線Central Kowloon Route Alignment

過往興建的鑽挖爆破式隧道

"Drill and Blast" Tunnels in the Past

香港有很多成功的隧道項目，都是使用鑽挖爆破法，以下是其中一些例子：

• 獅子山隧道，香港的第一條行車隧道，是一條約1.4公里長的雙管各2線隧道，於1967年通車連接沙田及九龍，爲一號幹線的其中主要部分。

• 大老山隧道，是香港最長的行車隧道，全長約4.0公里的雙管各2線隧道，於1991年通車連接九龍與新界東部。

• 大欖隧道，是一條約3.8 公里長的雙管各3線隧道。於1998 年正式通車，是三號幹線（郊野公園段）的一部分。

• 8號幹線隧道段包括4條行車隧道，其中的3條隧道包括沙田嶺隧道（1公里）、尖山隧道（2.1公里）及南灣隧道（1.2公里）都是採用鑽挖爆破法。各條隧道都是雙管各3線隧道。前兩者已於2008年通車，南灣隧道預計會在2009通車。

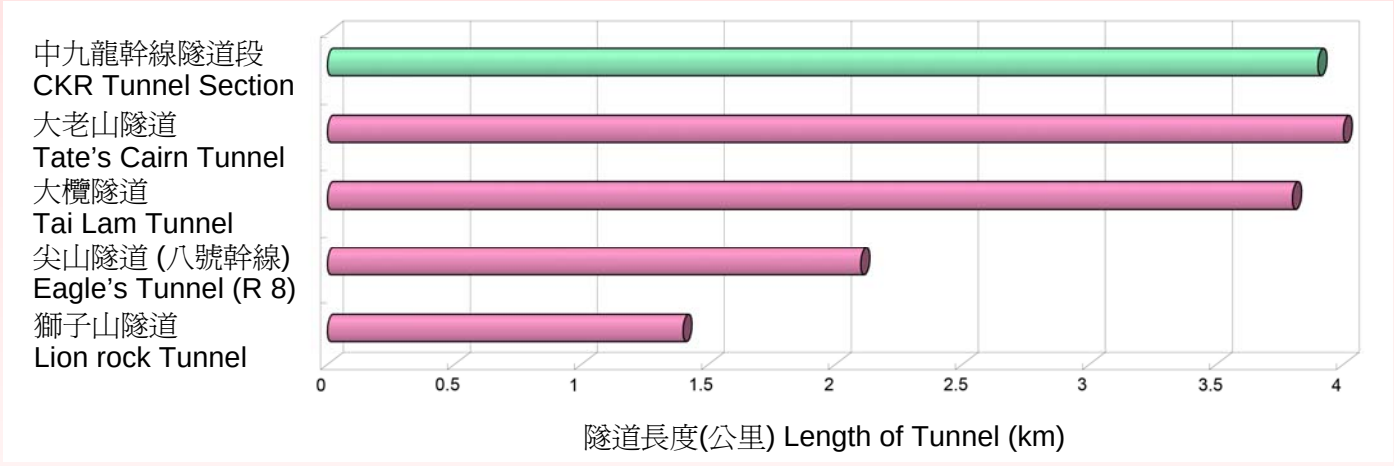
In Hong Kong, a number of road tunnel projects have been successfully completed using the drill and blast method. Here are some renowned examples:

• Lion Rock Tunnel – Being the first road tunnel in Hong Kong, it is a 1.4km long dual 2-lane tunnel. It was opened to traffic in 1967 connecting Sha Tin and Kowloon. It is a vital component of Route 1.

• Tate's Cairn Tunnel – the longest road tunnel in Hong Kong having a length about 4.0km. It was opened to traffic in 1991 connecting Kowloon and New Territories East. It is a dual-2-lane tunnel.

• Tai Lam Tunnel – this dual 3-lane tunnel is approx. 3.8km long. It was opened to traffic in 1998 forming part of Route 3 (Country Park Section).

• Route 8 tunnel sections contain 4 road tunnels, 3 of them including Sha Tin Heights Tunnel (1km), Eagle's Nest Tunnel (2.1km) and Nam Wan Tunnel (1.2km) have used "drill and blast" method. All are dual 3-lane tunnels Nam Wan Tunnel will be opened to traffic in 2009 while other tunnels have been opened to traffic in 2008.



獅子山隧道 Lion Rock Tunnel

大欖隧道 Tai Lam Tunnel

中九龍幹線-沉管式隧道
CKR Immersed Tube Tunnel

香港普遍使用沉管式方法興建過海隧道，如東區海底隧道及西區海底隧道等。中九龍幹線馬頭角至啓德發展區的一段長約400米的隧道，將會考慮使用沉管式隧道的建築方法。沉管式隧道的建築方法如下：

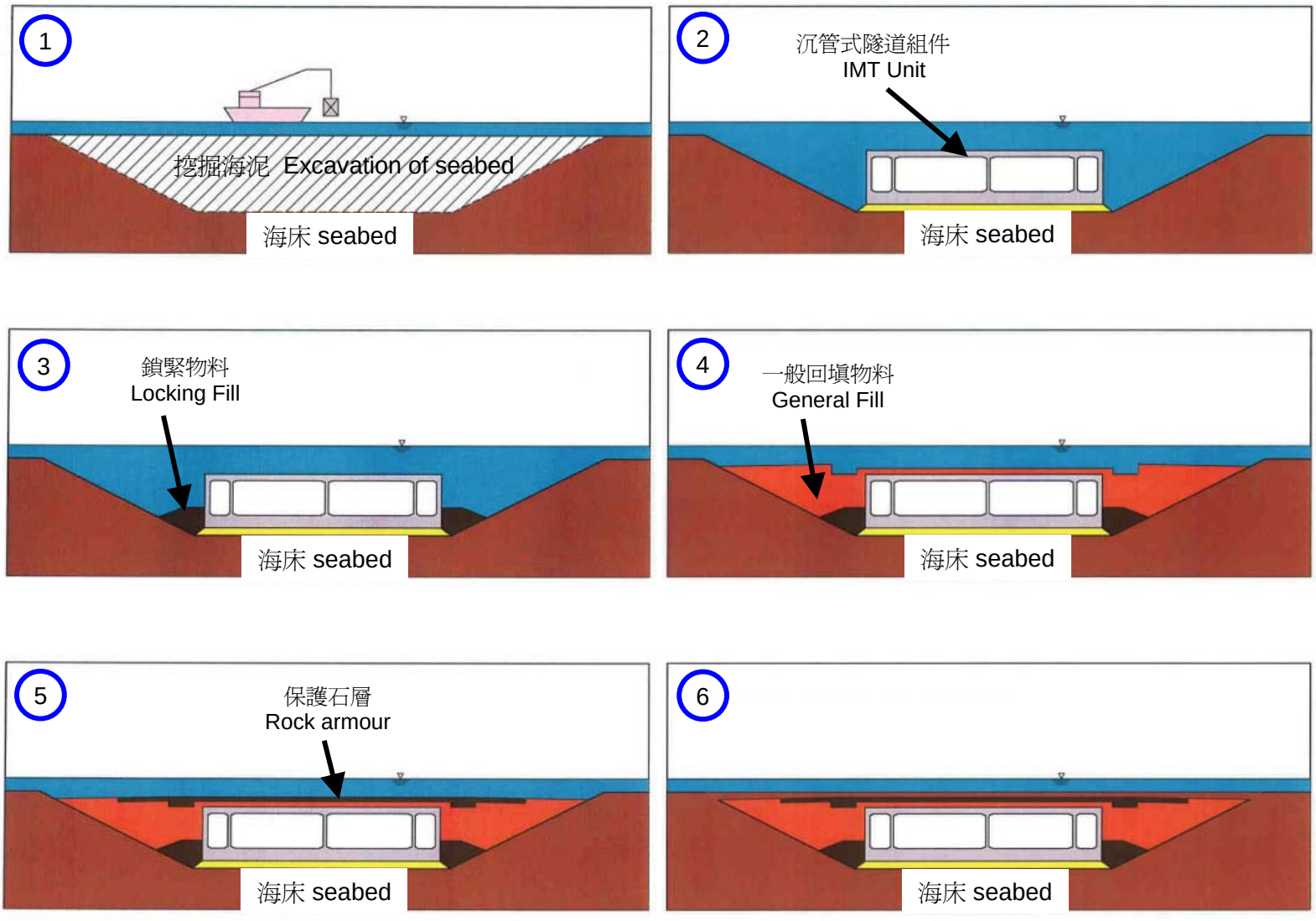
沉管式隧道的興建

1. 使用挖泥船挖掘海床
2. 使用拖船將沉管式隧道組件拖到預定位置並沉降於地基上
3. 使用鎖緊物料以鞏固組件
4. 沉管式隧道組件周圍回填物料
5. 放置保護石層以保護組件
6. 修復海床到原有水平

Immersed tube tunnel (IMT) construction method has been widely used in Hong Kong for cross-harbour tunnels, such as Eastern Harbour Crossing and Western Harbour Tunnel. The IMT construction method is being considered for the CKR's tunnel section of length about 400 m running from Ma Tau Kok to Kai Tak development area. This construction method is as follows :-

Construction of IMT

1. Excavation of seabed by dredger
2. IMT unit floated into position by tug boats and sunk in place on its foundation
3. Locking fill is placed to secure the unit.
4. General backfilling around IMT unit
5. Placing of rock armour to protect unit.
6. Restoring seabed to its original level.



沉管式隧道建築程序 (截面圖)

Immersed Tube Tunnel Construction Procedure (Cross Section)

沉管式隧道的例子 Examples of Immersed Tube Tunnel

西區海底隧道　Western Harbour Tunnel

東區海底隧道 Eastern Harbour Tunnel

我們重視你的意見
We Value Your Comment

「中九龍幹線通訊」是以月刊形式出版。如對本工程有任何疑問及意見，歡迎：

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