

## 編者的話 EDITOR'S WORDS

中九龍幹線建造工程現正全速進行，本期通訊會為大家詳細介紹中段隧道合約的隧道鑽挖機，提供各工程項目的最新工程進度、社區關懷活動，還會特別分享工程團隊獲得的業界獎項。「香港工程師」第49期(2021-11月)以中九龍幹線為封面故事，詳情請參閱中九龍幹線網址：[https://ckr-hyd.hk/wp-content/uploads/doc/pdf/HKIE%20Nov\\_2021\\_v5\\_Compressed\\_rev.pdf](https://ckr-hyd.hk/wp-content/uploads/doc/pdf/HKIE%20Nov_2021_v5_Compressed_rev.pdf)或掃描二維條碼。



Construction works for Central Kowloon Route (CKR) is proceeding at full swing. This issue gives a detailed introduction of the Tunnel Boring Machine (TBM) under Central Tunnel (CT) Contract, updates work progress and community caring activities for the CKR contracts, and especially shares the awards achieved by the CKR project team. CKR has been published as cover story in the HKIE Journal Vol. 49 (Nov 2021). For more detail, please visit our website: [https://ckr-hyd.hk/wp-content/uploads/doc/pdf/HKIE%20Nov\\_2021\\_v5\\_Compressed\\_rev.pdf](https://ckr-hyd.hk/wp-content/uploads/doc/pdf/HKIE%20Nov_2021_v5_Compressed_rev.pdf) or scan the QR code.



## 焦點 FOCUS - 中段隧道 CENTRAL TUNNEL (CT)

### 中段隧道鑽挖機簡介 Introduction of Tunnel Boring Machine (TBM) under CT

中段隧道工程主要包括建造一條長約2.8公里的雙管隧道，隧道主要以鑽爆方式建造。為了提高工地物流的可靠性及靈活性，特別採用隧道鑽挖機「星雲」來建造一條直徑較小的先導隧道，以加快連接何文田及馬頭角豎井通道。「星雲」直徑7.15米，全長120米，重達900噸，是一部土壓平衡隧道鑽挖機，可以平衡其切割機頭內的壓力和周邊的土力壓力，適用於複雜的土質。「星雲」更可於鑽挖的同時安裝隧道襯砌預製組件，支撐隧道壁，而挖出的泥石則經輸送管道運送到鑽挖機的尾部，再經豎井運出地面。

CT contract mainly comprises construction of a dual tube tunnel of about 2.8km-long. The tunnel is mainly constructed by drill-and-blast method. In order to enhance the reliability and flexibility of the site logistic, the TBM "Nebula" is adopted for construction of the pilot tunnel with a smaller diameter, to accelerate the connection between the access shafts at Ho Man Tin and Ma Tau Kok. "Nebula" has a diameter of 7.15m with total length of 120m and total weight of 900 tons. She is an earth pressure balanced TBM, which can balance the pressure within her cutter head and the surrounding earth pressure to cope with complex geological conditions. "Nebula" can also install the precast tunnel lining segments to support the tunnel wall at the same time as it progresses. The excavated materials are conveyed to the back by a conveyor belt and finally transported to the ground surface via the access shaft.



隧道鑽挖機 - 「星雲」  
TBM - Nebula



隧道鑽挖機在鑽挖的同時安裝隧道襯砌預製組件  
TBM installs precast tunnel lining segments at the same time as it bores

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### 隧道鑽挖機的組裝及運送 Assembly and delivery of TBM

「星雲」首先於廣州南沙廠房進行組裝及驗收測試，以確保運作正常，再分拆為29件組件分三艘躉船運送至香港，再經由陸路運送到何文田工地。由於部份組件體積較大，為免影響路面的交通情況，因此運送程序安排於凌晨時分多晚進行。運送程序更須預演以確保整個過程安全及可行，才可獲得由運輸署發出的許可證。

To ensure smooth operation, "Nebula" was fully assembled and tested at Nansha, Guangzhou before dismantled into 29 components, shipped to Hong Kong by three barges, and finally delivered by land to Ho Man Tin site. Some of the components were huge in size. Therefore, delivery works were carried out in mid-nights to minimize traffic impact. Trial run was carried out to ensure a smooth and safe delivery process before obtaining the permit issued by Transport Department.



於廣州南沙廠房組裝隧道鑽挖機  
Assembly of TBM at Nansha, Guangzhou



隧道鑽挖機組件由陸路運送到何文田工地  
Components of TBM delivered to Ho Man Tin site by land



隧道鑽挖機組件由躉船運送至香港  
Components of TBM delivered to Hong Kong by barge



隧道鑽挖機組件由陸路運送到何文田工地  
Components of TBM finally delivered to Ho Man Tin site by land

### 隧道鑽挖機的組裝及啟動 Assembly and launching of TBM inside the tunnel

由於「星雲」體積龐大，需要將組件按次序逐一吊運至地底進行裝嵌。完成組裝並進行現場驗收測試後，工程團隊將「星雲」滑行至啟動的位置，為啟動作準備。經過工程團隊數月的努力，「星雲」已於2021年7月16日正式啟動！隧道鑽挖機的啟動標誌着中九龍幹線 - 中段隧道工程踏入新里程。關於隧道鑽挖機啟動典禮，請參考第42期通訊：<https://ckr-hyd.hk/wp-content/uploads/doc/newsletter/2021-09.pdf>或掃描二維條碼。

"Nebula" is huge in size, therefore the components were lowered underground in sequence for assembly. Upon completion of the assembly, it was slid to its launching position for functional tests and prepared for launching. With months of efforts, "Nebula" was successfully launched on 16 July 2021! Launching of the TBM signifies a new chapter of the CKR-CT contract. For details of the launching ceremony, please refer to Newsletter Issue No.42: <https://ckr-hyd.hk/wp-content/uploads/doc/newsletter/2021-09.pdf> or scan the QR code.



隧道鑽挖機組件吊到豎井通道下進行組裝  
Components of TBM were lifted down to the tunnel via access shaft and assembled in the tunnel



於隧道內組裝隧道鑽挖機  
Assembly of TBM inside the tunnel

### 隧道鑽挖機的挑戰 Challenges of TBM

#### 高壓保養工作 Hyperbaric intervention

定期保養對於隧道鑽挖機尤其重要。工程團隊需於狹小的鑽挖倉檢查及更換旋轉刀盤和刀頭。保養期間，工程團隊需要對鑽挖倉進行加壓，以穩固鑽挖面及保障操作人員的安全，而當中鑽挖倉的壓力更高達約5.5巴，相當於約55米水頭壓力。工程團隊一直與勞工處保持緊密聯繫，以確保工序於安全和有效的方式下進行。

Routine maintenance of TBM is of prime importance for TBM operation. The team conducts routine intervention to the cutterhead and replaces the worn out disc cutters inside the tight excavation chamber. During intervention, in order to stabilize the excavation face and ensure safety of workers, the chamber is required to be pressurized by using compressed air, which creates a hyperbaric condition with an anticipated maximum pressure of 5.5 bars, which is equivalent to about 55m hydrostatic pressure. The team closely liaises with Labour Department in ensuring the work is conducted in a safe and efficient manner.

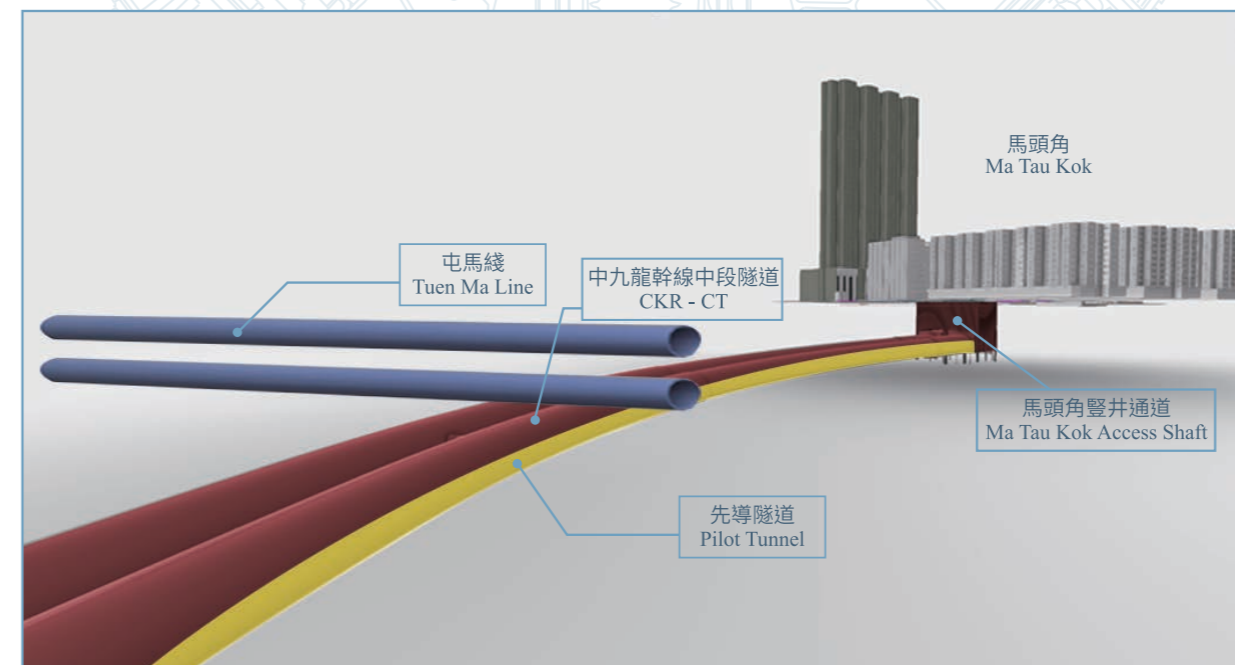


離開加壓艙前接受減壓  
Decompression after hyperbaric intervention

#### 穿越港鐵屯馬綫隧道底部 TBM crossing underneath MTR Tuen Ma Line

「星雲」建造先導隧道要面對的其中一個重大挑戰，就是走線需穿越港鐵屯馬綫隧道-土瓜灣站至宋皇臺站其中一段的底部，而該距離更少於二十米。此工程需要慎密的項目管理，以確保安全及港鐵服務不受阻礙。為確保工程可順利進行，工程團隊與港鐵鐵路保護組多次商討穿越方案的細節。經多次討論後，穿越工程最後於2021年10月30日零晨收車後開始進行。為對公眾的影響減到最低，工程團隊需要與時間競賽，必須趕於星期一第一班列車前完成。而工程期間，工程團隊需密切監測沉降、震動等數據，以確保屯馬綫的結構安全。不負眾望，「星雲」於2021年10月31日成功完成穿越任務！「星雲」現正全速駛向馬頭角豎井通道，很快便會於馬頭角工地與我們見面。

One of the major challenges faced by "Nebula" in constructing the pilot tunnel is that, the pilot tunnel is required to pass underneath the MTR Tuen Ma Line, between To Kwa Wan Station and Sung Wong Toi Station, with a distance of less than 20m. This requires meticulous project management to ensure safety and no interruption to the MTR service. To ensure smooth operation, the team closely coordinate with MTRC railway protection (RP) team on details of the TBM crossing operation. After rounds of discussion, the crossing operation eventually started in non-traffic hours on 30 October 2021 mid-night. To minimize any potential adverse impact to the public, the project team has to race against time, targeting to complete works before the first train on Monday morning. To ensure safety of the Tuen Ma Line structure, settlement and vibration data was closely monitored. On 31 October 2021, "Nebula" successfully completed her mission of crossing underneath MTR Tuen Ma Line! "Nebula" is now driving towards Ma Tau Kok access shaft in full swing, and will meet us soon at Ma Tau Kok site.



隧道鑽挖機穿越港鐵屯馬綫隧道底部的概念圖  
Conceptual image of TBM crossing underneath MTR Tuen Ma Line

## 矚目活動 HIGHLIGHTS OF EVENT

### 建造業議會數碼化大獎 2021 Construction Industry Council (CIC) Construction Digitalisation Award 2021

由建造業議會(議會)主辦的《2021建造業議會數碼化大獎》頒獎典禮是業界矚目的盛事，於2021年11月1日舉行。大獎旨在表揚傑出的本地項目及機構在推動及應用數碼化工具和工作流程的貢獻，利用創新科技提高生產力、質量、可持續性及安全性。頒獎典禮上，得獎隊伍分享了於數碼化轉型過程中的成就及成功故事。榮幸地，中九龍幹線工程團隊在是次2021建造業議會數碼化大獎頒獎典禮中榮獲「建造業議會數碼化大獎2021」(項目類別) 優異獎。

"The CIC Construction Digitalisation Award 2021 Presentation Ceremony" organised by the Construction Industry Council (CIC) - a signature industry award, was held on 1 November 2021. The Award aims to recognise outstanding local projects and organisations for their contributions in promoting and adopting digitalisation tools and workflows, and bringing about innovative technology to improve productivity, quality, sustainability and safety. At the ceremony, winning teams shared their achievements and success stories of their digital transformation journey. It is honored that the CKR Project Team has achieved the "CIC Construction Digitalisation Award 2021 - Merit (Project Category)".



建造業議會數碼化大獎  
2021 (項目類別) 優異獎  
CIC Construction Digitalisation  
Award 2021 - Merit (Project Category)



發展局常任秘書長(工程)劉俊傑先生向中九龍幹線工程頒發優異獎  
Permanent Secretary for Development (Works),  
Mr LAU Chun-kit, Ricky, presented the Merit Award to CKR



中九龍幹線工程團隊  
CKR project team

### 香港環境卓越大獎 2020 Hong Kong Awards for Environmental Excellence 2020

由環境運動委員會聯同環境保護署及九個機構合辦的「香港環境卓越大獎」頒獎典禮，於2021年10月28日假香港會議展覽中心以線上線下並行模式舉行。中九龍幹線-油麻地西工程的承建商利基 - SK ecoplant聯誼有幸榮獲銅獎(建造業)。此獎項表揚了承建商為增強工地的可持續性，使用不同的環保建築法及創新科技，減少碳排放、降低噪音、工程期間產生的廢料等對環境保護的卓越表現。

The presentation ceremony of Hong Kong Awards for Environmental Excellence (HKAAEE), organized by the Environmental Campaign Committee, alongside Environmental Protection Department and nine organizations, was held on 28 October 2021 at the Hong Kong Convention and Exhibition Centre in hybrid on-site and online mode. The contractor of Central Kowloon Route - Yau Ma Tei West Contract, Build King - SK ecoplant Joint Venture, was honoured the Bronze Award (Construction Industry). The award recognised the outstanding environmental performance of the project team in promoting sustainable construction by adopting different environmentally friendly construction methods and innovative technologies, and the excellent performance in environmental protection by reducing carbon emissions, construction noise, and generation of waste materials during construction.



「香港環境卓越大獎」銅獎(建造業)  
Hong Kong Awards for Environmental  
Excellence 2020 Bronze Award (Construction Industry)



線上舉行「香港環境卓越大獎」頒獎典禮  
Online award ceremony of the Hong Kong Awards  
for Environmental Excellence 2020





何文田  
Ho Man Tin

合約編號 HY/2014/20 油麻地西工程  
Contract No. Yau Ma Tei West Contract

海泓道工地的圍景平台鑽樁工程及連翔道工地的道路網絡連接橋樑面建造工程繼續進行中。友翔道工地的通風坑道建造工程正在進行中。連翔道的隔音屏障建造工程亦已經展開。  
Piling works for landscaped deck at Hoi Wang Road works site and bridge deck construction for the connection bridges to the road network at Lin Cheung Road works site continue. Construction of ventilation adit at Yau Cheung Road works site is in progress. Construction of noise barriers at Lin Cheung Road commenced.



圍景平台的鑽樁工程  
Piling works for landscaped deck



通風坑道的建造工程  
Construction of ventilation adit



連翔道的隔音屏障建造工程  
Noise barriers construction at Lin Cheung Road



渡船街天橋隔音屏障建造工程  
Noise barriers construction on Ferry Street Flyover

合約編號 HY/2019/13 大樓及機電工程  
Contract No. Buildings, Electrical and Mechanical Works Contract

油麻地通風大樓工地現正進行嵌岩鋼工字樁安裝工程。  
Pre-bored socketed H-pile installation works at Yau Ma Tei Ventilation Building works site are in progress.



油麻地通風大樓的嵌岩鋼工字樁安裝工程  
Pre-bored socketed H-pile installation works at Yau Ma Tei Ventilation Building works site



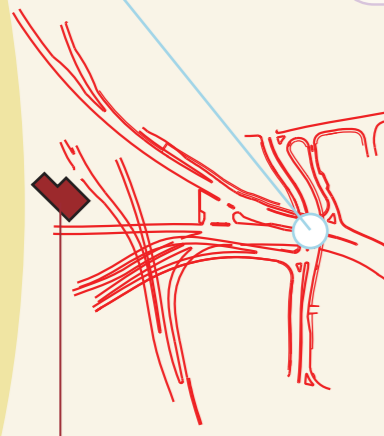
明挖回填隧道工程  
Construction of cut-and-cover tunnel



重置加士居道天橋工程  
Reprovisioning of Gascoigne Road Flyover

合約編號 HY/2014/08 油麻地東工程  
Contract No. Yau Ma Tei East Contract

渡船街天橋的隔音屏障建造工程已經展開。明挖回填隧道工程及重置加士居道天橋工程繼續進行中。  
Noise barriers construction on Ferry Street Flyover commenced. The construction of cut-and-cover tunnel and reprovisioning of Gascoigne Road Flyover continue.



油麻地通風大樓  
Yau Ma Tei Ventilation Building

油麻地  
Yau Ma Tei

油麻地西 Yau Ma Tei West

油麻地東 Yau Ma Tei East

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合約編號 HY/2018/02 啟德東工程  
Contract No. Kai Tak East Contract

橫跨啟祥道及啟德河的行車天橋鑽孔樁工程繼續進行。地下行車道、通風及機電坑道及擋土牆建造工程亦在進行中。樁帽及橋墩建造工程亦持續進行中。  
Bored piling works for vehicular bridges across Kai Tak River and Kai Cheung Road are in progress. Construction of underpasses, ventilation and electrical and mechanical adit and retaining wall continues. Construction of pile caps and abutments conducts on an ongoing basis.



橫跨啟祥道的行車天橋鑽孔樁工程  
Bored piling works for vehicular bridges across Kai Cheung Road



地下行車道、通風及機電坑道的結構建造工程  
Construction of underpasses, ventilation and electrical and mechanical adit



橫跨啟德河的行車天橋鑽孔樁工程  
Bored piling works for vehicular bridges across Kai Tak River

土瓜灣  
To Kwa Wan

合約編號 HY/2018/08 中段隧道工程  
Contract No. Central Tunnel Contract

中段隧道工程於油麻地、何文田及馬頭角豎井通道工地繼續進行隧道挖掘工程。為進一步減低工程對鄰近居民的影響，工程團隊亦於油麻地及馬頭角豎井通道工地興建臨時隔音罩，預計於2021年第四季完成。  
Tunnel excavation works at Yau Ma Tei, Ho Man Tin and Ma Tau Kok access shaft works sites continue. In order to further reduce the construction impact on the nearby residents, construction of temporary noise enclosure at Yau Ma Tei and Ma Tau Kok access shaft work sites are in progress. The temporary noise enclosures are anticipated to be completed in the last quarter of 2021.



隧道挖掘工程  
Tunneling Works



於油麻地豎井通道工地興建臨時隔音罩  
Construction of temporary noise enclosure is in progress at Yau Ma Tei access shaft works site



於馬頭角豎井通道工地興建臨時隔音罩  
Construction of temporary noise enclosure is in progress at Ma Tau Kok access shaft works site

大樓及機電工程  
Buildings, Electrical and Mechanical Works

中段隧道  
Central Tunnel

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合約編號 HY/2014/07 啟德西工程  
Contract No. Kai Tak West Contract

馬頭角 - 明挖回填隧道的「連續式互扣式管樁」安裝工程進行中。  
Ma Tau Kok - Installation of "clutch pipe pile" for cut-and-cover tunnel continues.

九龍灣 - 第一期海底隧道正進行海堤及海床回復工程；第二期海底隧道的臨時海上工作平台及臨時圍堰建造工程亦繼續進行。  
Kowloon Bay - Reinstatement of seabed and seawall for Stage 1 Underwater Tunnel are in progress; Installation of temporary marine platform and cofferdam for Stage 2 Underwater Tunnel continues.

啟德 - 明挖回填隧道、低於地面道路及地下行車道的回填工程已經展開。  
Kai Tak - Backfilling works for cut-and-cover tunnel, depressed road and underpass commenced.



在馬頭角的「連續式互扣式管樁」安裝工程  
Installation of "clutch pipe pile" for cut-and-cover tunnel



在九龍灣的第二期海底隧道的臨時海上工作平台及圍堰建造工程  
Installation of temporary marine platform and construction of cofferdam for Underwater Tunnel Stage 2 at Kowloon Bay



在啟德的明挖回填隧道、低於地面道路及地下行車道的回填工程  
Backfilling works for cut-and-cover tunnel, depressed road and underpass at Kai Tak

啟德西  
Kai Tak West

啟德東  
Kai Tak East

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京士柏  
King's Park

愛跑·河上鄉2021 Lifewire Run - Ho Sheung Heung 2021

逾110名中九龍幹線工程團隊的跑手們，於2021年11月14日齊集上水河上鄉，參與由Lifewire《護·聯網》舉辦的「愛跑·河上鄉 (2021)」慈善跑步嘉年華活動，藉此宣揚愛與關懷，鼓勵大眾支持患有罕見病的兒童，同時增加對罕見病的認知，推動傷健共融社會。  
跑手們全力以赴完成10公里賽事之餘，同時慷慨解囊為患上罕見病的兒童籌募醫療及康復經費。再次感謝跑手們付出的汗水，亦感謝一眾同事的踴躍捐輸。  
Over 110 runners from CKR project team gathered at Ho Sheung Heung, Sheung Shui to take part in "Lifewire Run - Ho Sheung Heung (2021)" on 14 November 2021. This charity run aimed at spreading the spirit of love and care, encouraging supports for children suffering from rare diseases, by raising public awareness, and promoting an inclusive society. CKR runners made an all-out-effort to participate in the 10km race, and at the same time generously raised medical and rehabilitation funds for the children with rare diseases. Thanks again to the runners for their efforts and also to the colleagues for their generous donations.



愛跑·河上鄉慈善跑步日  
Day of Lifewire Run - Ho Sheung Heung charity run

「糧友行動」衣服捐贈活動 Clothes donation for Food Friend Action

油麻地東及油麻地西工程團隊於2021年10月11日至23日在工地辦事處組織了一次衣服捐贈活動。同事們踴躍捐贈了各種衣服，所收集的衣服會捐贈給「糧友行動」，以進一步分發給油尖旺區的基層家庭。  
Yau Ma Tei East and Yau Ma Tei West Project Teams organized a clothes donation activity in site offices during 11 - 23 October 2021. Colleagues actively participated in the donation of various clothes. Collected clothes were donated to Food Friend Action for further distribution to grassroots families in Yau Tsim Mong district.



「糧友行動」衣服捐贈  
Clothes Donation to Food Friend Action

聯絡資料 CONTACT INFORMATION

如對工程有任何疑問及意見，可透過以下方法聯絡我們  
Should you have any enquiries or comments on the project, please contact us via the following

路政署 - 中九龍幹線  
Highways Department - Central Kowloon Route Project

電話 Telephone : 2762 3601  
電郵 E-mail : enquiry@ckr-hyd.hk  
網址 Website : www.ckr-hyd.hk

24小時熱線電話 24-hour Hotline

油麻地西工程 Yau Ma Tei West	6331 5330	啟德西工程 Kai Tak West	7100 3993
油麻地東工程 Yau Ma Tei East	9129 2027	啟德東工程 Kai Tak East	6391 7037
中段隧道工程 Central Tunnel	6313 0900	大樓及機電工程 Buildings, Electrical and Mechanical	6012 3590

馬頭角社區聯絡中心現正暫停服務，預計於2022年第一季重新開放予公眾人士參觀。  
Ma Tau Kok Community Liaison Centre is closed temporarily and expected to resume service and open to the public in Q1 2022 tentatively.