

## 粉嶺繞道 (東段)

### 橋樑平衡軸心轉體施工

# 順利完成

Completion of Horizontal Bridge Rotation of Fanling Bypass Eastern Section



跨越港鐵東鐵線  
Spans Across MTR East Rail Line

## 粉嶺繞道 (東段) The Fanling Bypass Eastern Section

粉嶺繞道 (東段) 是粉嶺北新發展區第一階段下的主要基礎設施。繞道長約四公里，是一條雙線雙程行車道，當中由3.3公里的高架橋及700米的地下行車道所組成。走線由粉嶺北新發展區近石湖新村起，然後向南伸延至粉嶺公路近九龍坑段。完成後，繞道將為粉嶺北新發展區提供一條便捷的主幹道前往市區，亦舒緩現時粉嶺市區中心交通擠塞的情況。

繞道在塘坑村附近會分成兩段長跨度的高架橋跨越現有港鐵東鐵線。為減低對東鐵線的風險並縮短施工時間，工程團隊首次採用了嶄新的橋樑轉體施工方法。其中一段已完成轉體的行車橋長度達136米，重量超過7,000噸（大約等於470部雙層巴士的重量）。兩次的轉體施工分別在9月底及11月初順利完成。

The Fanling Bypass Eastern Section is a major highway infrastructure under construction in the first phase development of the Fanling North New Development Area (NDA). The bypass is a 4-kilometre long dual two-lane carriageway, which comprises 3.3 kilometres of viaducts and 700 metres of underpass. The alignment starts from the NDA near Shek Wu San Tsuen, and extends through to Fanling Highway Kau Lung Hang section. Upon completion, the bypass will serve as a speedy trunk road linking the NDA and urban area, as well as alleviate the current traffic congestion within Fanling town centre.

The bypass will split into two long-span viaduct crossing the existing MTR East Rail Line near Tong Hang Tsuen. To minimise the risk to the East Rail Line and shorten construction time, the project team adopted the innovative bridge rotation method, which was first-time ever used in Hong Kong. One section of the rotated viaduct is about 136 metres long and weighs more than 7,000 tonnes (about the weight of 470 double-deck buses). The two rotation operations had been successfully completed in end September and early November.



## 於東鐵線路軌旁建造橋樑結構 Construction of bridge structures next to the East Rail Line



轉盤安裝  
Installation of bridge rotation system



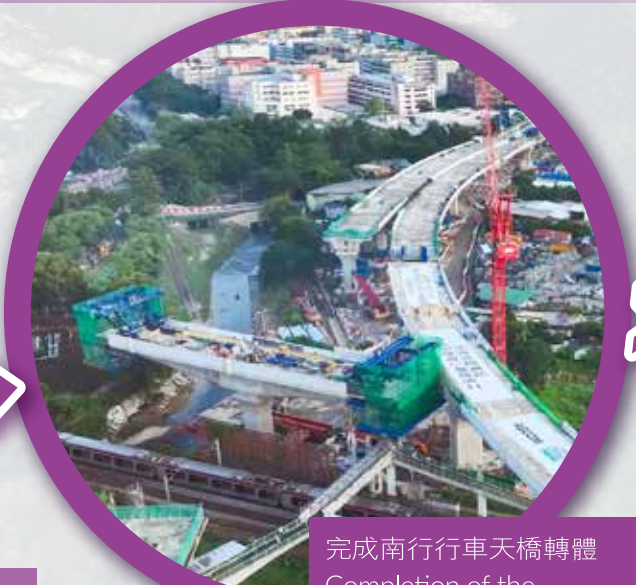
橋墩施工  
Bridge pier construction



於鐵路非行車時間安裝掛籃式模板，以建造橋面  
Installation of form traveller for bridge deck construction during non-traffic hours of the railway line



天橋轉體準備就緒  
Get ready for horizontal bridge rotation



完成南行行車天橋轉體  
Completion of the southbound viaduct rotation



完成北行行車天橋轉體  
Completion of the northbound viaduct rotation

### 為何採用橋樑平衡轉體施工?

粉嶺繞道 (東段) 部份走線須跨越現有東鐵線，然而在路軌保護區域內進行重型吊運工序的風險很高，採用平衡轉體施工法，可解決跨越路軌的限制。

- ✓ 轉體可於一晚完成，將路軌上空的夜間工作大為減少，從而縮短整體施工時間
- ✓ 降低施工對鐵路運作的風險
- ✓ 節省起重成本
- ✓ 大部份工程可於日間東鐵線旁施工，不會干擾鐵路運作
- ✓ 確保安全可靠

### Why we use horizontal bridge rotation construction?

Part of the alignment of Fanling Bypass Eastern Section will span across the existing East Rail Line. The use of horizontal bridge rotation method can eliminate the need to carrying out heavy lifting works within the railway protection zone.

- ✓ The rotation work can be completed within one night, thereby significantly reduce the amount of night works and shorten the overall construction period
- ✓ Reduce construction risks to railway operation
- ✓ Save lifting costs
- ✓ Majority of the works can be carried out alongside the East Rail Line during daytime without interfering the railway operation
- ✓ Ensure safety and reliability



### 全港首次「行車天橋轉體操作」

工程團隊分別於9月29日及11月3日凌晨，利用東鐵線非行車時段，將在東鐵線旁邊預先建造的橋樑作水平旋轉，令橋身瞬間跨越鐵路。工程團隊更邀請了發展局常任秘書長 (工務) 劉俊傑太平紳士、土木工程拓展署署長方學誠太平紳士、香港鐵路有限公司 (港鐵) 車務及創新總監李家潤博士，與其他相關政府部門代表一同見證今次香港工程界歷史性的橋樑轉體操作順利完成。

### Hong Kong's First "Horizontal Bridge Rotation Operation"

In the early morning of 29 September and 3 November, the project team made use of the non-traffic hours of the East Rail Line to horizontally rotate the bridge structures, which had been constructed next to the railway tracks, to span across the railway lines within a short period. This historical successful bridge rotation operation in engineering sector in Hong Kong was witnessed by Ricky Lau, JP, Permanent Secretary for Development Bureau, Michael Fong, JP, the Director of Civil Engineering and Development Department (CEDD), Dr. Tony Lee, Operations & Innovation Director of MTR Corporation Limited (MTRCL), together with representatives of other relevant government departments.

### 各方合作制定安全施工方案

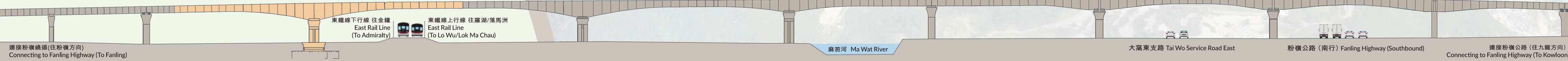
整個轉體工程經過詳細規劃和設計。為克服各種環境挑戰，工程團隊向國內轉體施工及監控的專家汲取經驗。引進國內先進工程技術，亦同時結合本地的設計標準，令整個橋樑轉體前的結構可抵禦本地風季時可能出現的強風，確保施工過程安全及穩定。工程團隊亦感謝港鐵全力配合和支持，提供專業意見，協助制定符合鐵路安全的施工方案。今次橋樑轉體的成功，為香港工程界在建橋技術的發展奠定重要里程碑。工程團隊採用創新的施工方法，成功克服香港擠迫城市環境下的施工困難，亦為日後應用同類技術於其他基建項目提供寶貴經驗。工程團隊在餘下的繞道建造工程中，會繼續秉承專業精神，為北區居民建構更完善的交通網絡。

詳情請參閱短片:  
Scan QR code to view more:



### Collaborative Safety Construction Planning

The construction of bridge rotation structures was planned and designed in detail. To overcome various site constraints, the project team drew on the experience of Mainland specialists on the bridge rotation method and monitoring. The introduction of advanced engineering technology from the Mainland, combined with local design standards, enabled the bridge structures to withstand the strong wind that may occur during the typhoon seasons in Hong Kong before rotation, and thus secured safety and stability throughout the construction process. The project team also expressed gratitude to MTRCL for their full cooperation and support in providing professional advice and assistance in formulation of construction plan which safeguard the railway premises. The successful use of bridge rotation method earmarked a significant milestone for the bridge construction technology in engineering sector in Hong Kong. The project team showcased their efforts to adopt innovative construction technology to overcome the difficulties of carrying out construction works within Hong Kong's congested urban environment. It has also accumulated valuable experience for application of the same technology on future infrastructure projects with similar constraints. The project team will continue to uphold professionalism in the remaining works in this project in order to build a better transportation network for the residents of the North District.





Red4U 夏日音樂祭

工程團隊聯同香港青少年服務處於粉嶺北社區聯絡中心舉行夏日音樂祭，讓一眾熱愛音樂的北區青少年藉此機會參觀粉嶺北社區聯絡中心，了解地區基建設施之餘，更可在這個社區新地標進行音樂交流。是次活動不但拉近了社區不同持份者的距離，更促進了社區之間的互動與合作，建立良好聯繫。

Red4U Summer Music Festival

The project team joined hands with the Hong Kong Children & Youth Services to hold a Summer Music Festival at the Fanling North Community Liaison Centre, allowing participating teenagers in the North District to take the chance to explore the Centre and to learn about the district's infrastructural facilities, while exchanging music in the new landmark. This event not only bridged stakeholders together, but also promoted interaction and cooperation among the community.



塱原自然生態公園開幕禮

為平衡發展和保育，土木工程拓展署在2019年年底展開工程，將37公頃的塱原核心地帶建設成自然生態公園，以補償受新發展區影響的濕地。公園已於2024年11月9至10日舉行開幕同樂日，正式向公眾開放。活動首日，發展局局長簡漢豪、太平紳士和環境及生態局局長謝展寰、太平紳士更親臨主持開幕典禮，共同見證這項保育成果。

for the affected wetland due to the NDA development. The park has been open to the public with an Opening Fun Day on 9 and 10 November 2024. On the first day of the event, Bernadette Linn, JP, Secretary for Development, and Tse Chin Wan, JP, Secretary for Environment and Ecology, officiated at the opening ceremony to witness this conservation milestone.



Opening Ceremony for Long Valley Nature Park

In order to strike a balance between development and conservation, the CEDD commenced the construction works in late 2019, to develop 37 hectares of land in the heart of Long Valley into a nature park, as compensation

全球首例 S960 超高強度鋼材行人天橋成功合攏

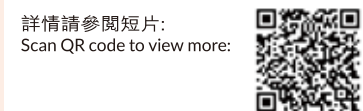
工程團隊在粉嶺繞道東段（石湖新村北至龍躍頭）項目中率先採用S960超高強度鋼材，是全球首次採用此物料建造行人天橋。

橫跨梧桐河的行人天橋，南北兩段橋身已於2024年9月底完成吊裝，代表此重要里程碑在新中國成立75周年前夕達成階段性成果。

Connection of World's First Ultra-high Strength S960 Steel Footbridge Completed

The project team has pioneered the application of ultra-high strength S960 steel under the Fanling Bypass Eastern Section (Shek Wu San Tsuen North to Lung Yeuk Tau) project. This initiative marks the first global application of ultra-high strength S960 steel in footbridge construction.

The erection of the northern and the southern span of the footbridge across Ng Tung River was completed in late September 2024, signifying the milestone achievement right before the 75th anniversary of the founding of the People's Republic of China.



「第三十屆公德地盤嘉許計劃」

工程團隊於發展局和建造業議會合辦的「第三十屆公德地盤嘉許計劃」中，獲頒七個獎項，以表揚其在工地安全及管理方面的傑出成就。

The 30th Considerate Contractors Site Award Scheme

The 30th Considerate Contractors Site Award Scheme co-organised by the Development Bureau and the Construction Industry Council presented seven awards to the project team in recognition of their outstanding efforts in site safety and management.



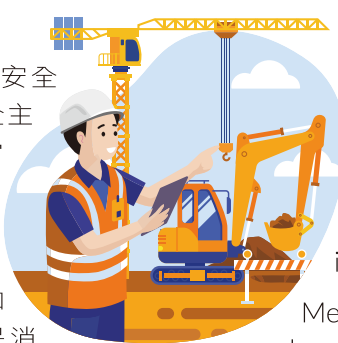
「生命第一」安全推廣活動2024

「粉嶺北新發展區第一階段—粉嶺繞道東段（石湖新村北至龍躍頭）」及「粉嶺北新發展區第一階段—粉嶺繞道東段（崇謙堂至九龍坑）」合約工程，在「生命第一」安全推廣活動2024榮獲三個獎項，表彰工程團隊在推廣工地安全文化，以及利用安全智慧工地系統提升建築工地安全方面的卓越表現。

工程小知識 Engineering Knowledge

安全主任

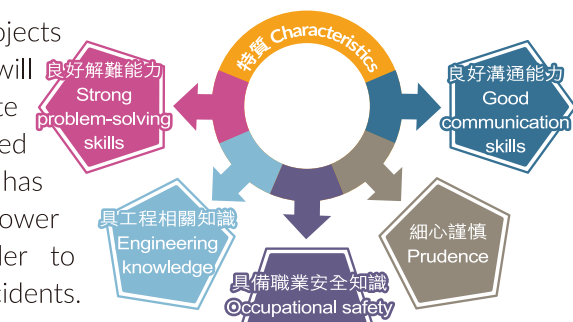
工程團隊一直以工地安全為首要考慮，其中安全主任在日常施工中擔當把關角色，他們的主要工作包括：進行風險評估、擬定安全施工方案、巡查工地和前线作業狀況、確保消防設施保養妥當、調查意外成因、制訂改善措施，以及舉行安全訓練等。



The Safety Officers

Site safety has always been the top priority of our project team, and Safety Officers play a gate-keeping role in daily construction operation. Their main duties include preparation of risk assessments and safe working procedures, safety inspection of work sites and construction activities, accident investigation, formulation of safety improvement measures, as well as safety training.

Mega-scale infrastructure projects such as the Northern Metropolis will commence progressively, and create a high demand for jobs in related fields. In this regard, the industry has been actively stepping up manpower training in recent years in order to improve site safety and prevent accidents.



查詢詳情，請與古洞北及粉嶺北新發展區辦事處聯絡。 For further information, please contact the Kwu Tung North and Fanling North New Development Area Office. 古洞北 tel: 3547 1645 email: ktnrp@cedd.gov.hk 粉嶺北 tel: 3547 1648 email: fnnp@cedd.gov.hk

瀏覽古洞北及粉嶺北新發展區（第一階段）網頁，了解更多最新工程資訊！ Visit Kwu Tung North and Fanling North New Development (Phase 1) webpage for more latest project information!



A large map of the development area with various project callouts. Callouts include: 1. Site Formation and Infrastructure Works (Contract No. ND/2019/01) at Pak Shek Au Interchange. 2. Development of the Long Valley Nature Park (Contract No. ND/2019/03) including an opening ceremony. 3. Fanling Bypass Eastern Section (Contract No. ND/2019/04) including a steel footbridge. 4. Site Formation and Infrastructure Works (Contract No. ND/2019/07) for roads and drains. 5. Roads and Drains (Contract No. ND/2019/02) between Kwu Tung Market and Shek Wu Hui. 6. Roads and Drains (Contract No. ND/2019/05) near Shung Him Tong. 7. Reprovisioning of North District Temporary Wholesale Market (Contract No. ND/2019/06) for agricultural products. 8. Reprovisioning of North District Temporary Wholesale Market (Contract No. ND/2019/06) for fish and seafood. The map also shows the MTR Kwu Tung Station, Sheung Shui Sewage Treatment Plant, and various local landmarks like the North District Hospital and Sports Ground.