

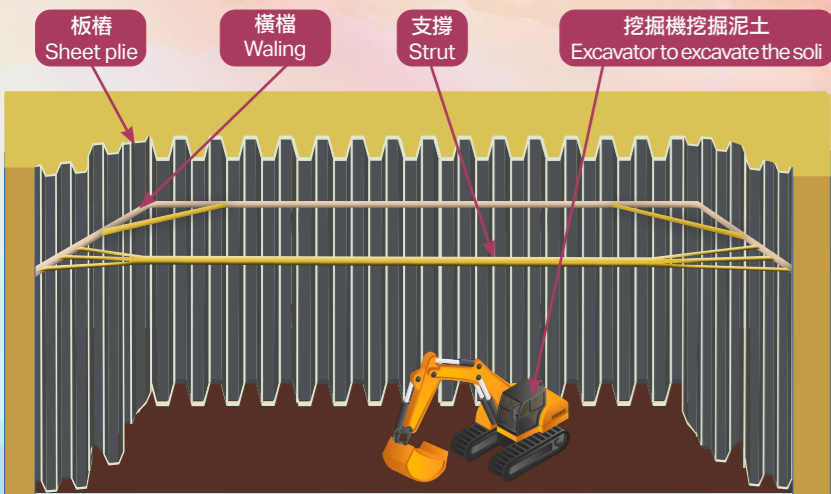
歡迎參閱第二十四期東涌新市鎮擴展工程通訊，本通訊將介紹磁性調諧質量阻尼器，並提供工程進度及相關資訊。  
Welcome to our twenty fourth issue of the newsletter of Tung Chung New Town Extension. This issue will introduce Magnetic Tuned Mass Damper, the progress of works and relevant information.

## 磁性調諧質量阻尼器 Magnetic Tuned Mass Damper

### 西污水泵房 West Sewage Pumping Station

為配合東涌新市鎮擴展，我們正於迎康街興建西污水泵房。西污水泵房建造期間須挖掘地庫，並以臨時工程來支撐泥土。常見的方法為安裝挖掘與側向支撐系統，包括安裝板樁、橫擋和支撐結構。板樁是一種傳統臨時工程物料，它能夠安裝在泥土中，常用於基礎設施項目的臨時工程中。

To facilitate Tung Chung New Town Extension, we are constructing the West Sewage Pumping Station at Ying Hong Street. As the construction of the West Sewage Pumping Station involves excavation of the basement, temporary works are required to support the soil during excavation. The conventional method is to install excavation and lateral support system, including sheet piles, walings and struts. Sheet pile is a traditional material for temporary work and can be installed in ground and are commonly used in temporary works on infrastructure projects.



安裝挖掘與側向支撐系統 (概念圖)  
Installation of Excavation and Lateral Support System (Conceptual Plan)

### 安裝西污水泵房板樁的過程 Installation Process of Sheet Piles at West Sewage Pumping Station

施工團隊會利用振動錘來安裝臨時板樁，振動錘產生垂直振動，從而令板樁打入泥土中。安裝板樁工程難免會產生聲響，影響附近居民。因此，項目團隊積極尋求有效的緩解措施。

The temporary sheet piles are usually installed by a vibrating hammer. A vibrating hammer generates vertical vibration to drive the sheet piles into the soil. Installation of sheet piles would inevitably generate noise and affect residents nearby. Therefore, construction team actively sought effective mitigation measures.

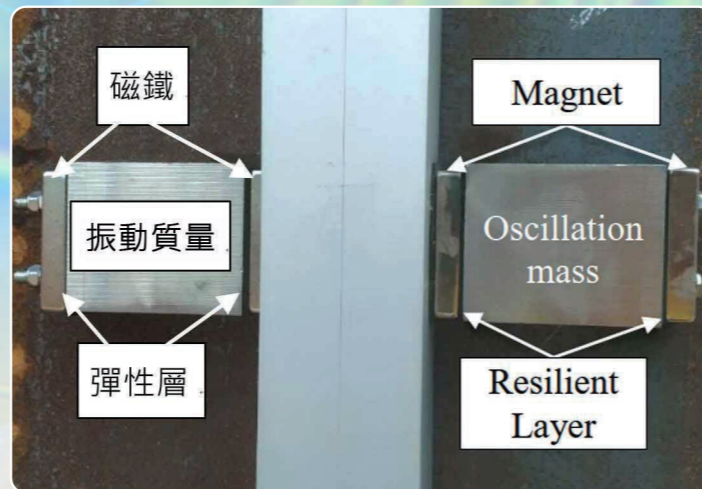


於西污水泵房安裝鋼板樁  
Installation of sheet piles at West Sewage Pumping Station

### 磁性調諧質量阻尼器 Magnetic Tuned Mass Damper

東涌東新市鎮擴展工程團隊一直致力減低工程對公眾及環境的影響，包括工程聲響問題，除了豎立隔音屏障，工程團隊研發了一套度身設計，並適用於板樁的磁性調諧質量阻尼器，以減低工程聲響。

Tung Chung East New Town Extension Project Team concerned about the impact on the public and the environment, including the noise generated during construction activities. In addition to erecting noise barriers, the Project Team has developed a set of tailor-made Magnetic Tuned Mass Damper, which is suitable for sheet piles, in order to mitigate noise impact.



磁性調諧質量阻尼器的配置  
Configuration of magnetic tuned mass damper



磁性調諧質量阻尼器  
Magnetic tuned mass damper

磁性調諧質量阻尼器大約5米長並依附板樁上，它由多個不銹鋼製的振盪質量組成，並夾在彈性層和磁鐵之間。當板樁受到振動時，阻尼器會以相反方向振動，振動產生的能量會轉移到振動質量上，而彈性層則用作吸收振動的能量，根據能量守恆定律，振動的動能會轉化為熱能，消滅振動能量，從而有效降低安裝板樁時產生的聲響。根據現場測試結果，調諧質量阻尼器可減少約為9dB(A)的最大噪音水平。

設計方面，磁性調諧質量阻尼器的其中一端設有兩個手把，而另一端則裝有一組滑輪，加上其輕巧的設計，即使只有一名工友亦能徒手安裝阻尼器於板樁上，大大提升工程的施工效率。

The magnetic tuned mass damper is approximately 5 meters long and attached to the sheet pile. The damper is comprised of multiple oscillating masses made of stainless steel, which are sandwiched between elastic layers and magnets. When the sheet pile is vibrated, the damper will vibrate in the opposite direction, the resonance energy will be transferred to the oscillation mass, and the elastic layer will be used to absorb the vibration energy. According to the law of energy conservation, the kinetic energy of the vibration will convert to heat energy. It reduces the vibration energy of the steel plate, thereby effectively reducing the noise generated when installing sheet piles. Based on field test results, the magnetic tuned mass damper was measured to reduce the maximum noise level by approximately 9dB(A).

In terms of design, one end of the damper is equipped with two handles, while the other end has a set of pulleys. Combined with its lightweight design, even a single worker can install the damper on the sheet pile manually, significantly enhancing the construction efficiency.

磁性調諧質量阻尼器在安裝過程中應用  
Magnetic Tuned Mass Dampers are applied during the installation of sheet piles



用於板樁工程的調諧質量阻尼器，經過反覆測試和改良，最終能夠大大減少安裝板樁時產生的聲響。工程團隊的成果獲得聲學學會的肯定，一共榮獲兩項獎項，包括產品/材料發明 - 金獎及大獎。團隊會繼續探討使用更多創新的施工方法，包括環保和安全方面，與業界一同力求進步。

The magnetic tuned mass dampers used for sheet pile works, after repeated testing and improvements, can significantly reduce noise in its final state. The project team's achievements have been recognized by the Hong Kong Institute of Acoustics, receiving a total of two awards including Gold Award and Grand Award of Product/Material Invention. The team will continue to explore innovative construction methods, including environmental protection and safety measures, to strive for improvement in collaboration with the industry.

除此之外，調諧質量阻尼器亦獲得環保促進會的肯定。工程團隊致力持續改善工程項目在環境及安全上的表現，同時非常注重在工地運作及管理時實踐環保及可持續性。團隊的努力一共榮獲兩項獎項，包括優越環保管理獎(項目管理)銀獎及超卓環保安全健康獎(項目管理)銀獎。團隊積極評估和檢討各項日常營運的程序，確保其符合環保準則，建立完善的環保管理系統以繼續履行企業的社會責任。

Furthermore, magnetic tuned mass dampers have been recognized by the Green Council. The project team is committed to continuously improving the environmental and safety performance of its construction projects. The team places great emphasis on environmental protection and sustainability in both site operations and management. The team's efforts received two awards including Silver of Green Management Award – Project Management and Silver of Environmental, Health and Safety Award. The team actively assesses and reviews each procedures in their daily operation to ensure compliance with environmental standards. We will strive for establishing a comprehensive environmental management system to fulfill corporate social responsibility continuously.



優越環保管理獎(項目管理) - 銀獎  
超卓環保安全健康獎(項目管理) - 銀獎  
Green Management Award - Project Management - Silver  
Environmental, Health and Safety Award - Silver

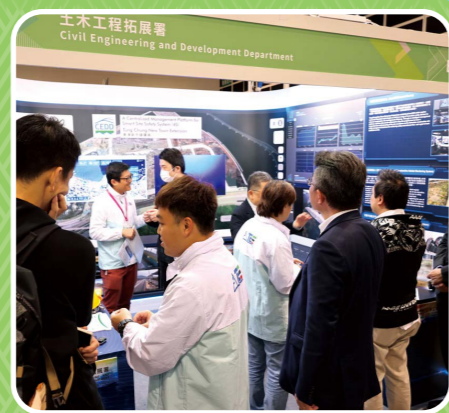
## 社區聯繫 Community Engagement

### 職安健創科博覽 OSH Innovation & Technology Expo



職安局及勞工處於2024年3月7日及8日一連兩日在香港會議展覽中心舉辦全港首個「職安健創科博覽」，東涌東工程團隊亦有參與是次活動，我們於展覽中介紹東涌東的安全智慧工地系統，向參觀者展示智能安全裝置，講解如何運用了這些創新科技實時監察高風險的工序，讓工程團隊掌握整個工地的狀況，作出工地安全管理決策，進一步提升工地的安全及工地管理效率。

The Occupational Safety and Health Council and the Labour Department held Hong Kong's first "OSH Innovation & Technology Expo" at the Hong Kong Convention and Exhibition Centre for two consecutive days on 7 and 8 March 2024. The Tung Chung East New Town Extension Project Team joined to participate. At this event, we introduced the smart site safety system of our project at the exhibition, demonstrated the smart safety devices to visitors, and explained how to use these innovative technologies to monitor high-risk activities in real-time, allowing the engineering team to grasp the status of the entire construction site and make decisions on construction site safety to further improve construction site safety and construction site management efficiency.



### 獻築福 賀新禧 Greetings to Community for Chinese New Year

為迎接農曆新年，東涌西義工隊「愛·與東涌行」與區內長者一同製作新年掛飾，並向區內社區機構及屋苑派發由工程團隊製作的揮春，共賀新春。

To celebrate the Chinese New Year, Tung Chung West volunteer team "Loving TC" made handcrafted New Year's decoration with the elderly living in Tung Chung, and distributed Fai Chun prepared by the project team to the community organizations and the housing estates to celebrate the festival.



義工隊與長者一同製作新年掛飾及向社區機構派發揮春  
Volunteer team made New Year's decoration with the elderly and distributed Fai Chun to the community organizations



### 資訊與聯絡 Information and Enquiries

如對東涌新市鎮擴展項目有任何意見及建議，歡迎提出。  
Your views and comments on Tung Chung New Town Extension project are welcome.

電話  
Telephone **5976 1853**

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Email **enquiry@tungchungnte.com** **http://www.tung-chung.hk**

如欲了解更多資料，請瀏覽東涌新市鎮擴展項目網頁：  
For further information, please visit the website of Tung Chung New Town Extension project:



土木工程拓展署  
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

可持續大嶼辦事處  
SUSTAINABLE LANTAU OFFICE

AECOM

ARUP

Build King SAMSUNG CAT  
BUILD KING - SCT JOINT VENTURE

CAC 中國地質工程集團有限公司  
CHINA GEO-ENGINEERING CORPORATION

Build King

Build King RC 順豐土木  
Build King - Richwell Civil Joint Venture

中國中鐵

### 「香港工程師週嘉年華」激發創意 培育工程業界精英 "Hong Kong Engineers Week Carnival" inspires creativity and cultivates elites in the engineering industry

東涌東義工隊「友建地」聯同區內社區中心，帶領東涌家庭參加一年一度的「香港工程師週嘉年華」，玩樂之餘還認識工程行業的創新科技與無限創意，讓小朋友了解這個行業，發展他們對工程的興趣！

這次嘉年華在西九文化區海濱長廊舉行，當日「友建地」與東涌居民都玩得非常開心，小朋友還戴上安全帽和穿上反光衣，一齊嘗試做工程師的滋味。「友建地」的義工和小朋友還參加了另一個攤位遊戲，為生態海岸線的紅樹林配對各種棲息生物，從而認識與東涌新市鎮擴展項目息息相關的紅樹林生態系統。

透過和「友建地」義工參與不同的攤位介紹和遊戲，家長與小朋友了解東涌東的工程項目，亦明白工程師在日常生活中的扮演著重要的角色。小朋友還說做工程師十分有意義，希望長大後能成為工程師，發揮自己的知識和創意，為大眾提升生活質素，建造理想的居住地方！

The Volunteer Team of Tung Chung East "Builder" teamed up with the local community centre to lead Tung Chung families to participate in the annual "Hong Kong Engineers Week Carnival". While having fun, they also learned about innovative technologies and unlimited creativity in the engineering industry, allowing children to understand the engineering industry and develop their interest in engineering!

This carnival was held at the promenade of the West Kowloon Cultural District. "Builder" and Tung Chung residents played joyfully on that day. The children also put on safety helmets and reflective clothing to try out what it's like to be an engineer. "Builder" and the children participated in a booth game, matching various habitats for the mangroves on the ecological coastline. This allowed parents and children to understand the mangrove ecosystem, which is closely related to the Tung Chung New Town Extension Project.

Parents and children participated in different booth introductions and games with "Builder" and learned about the Tung Chung East project. They also understood that engineers play an important role in daily life. The children also said that being an engineer is very meaningful. When they grow up, they hope to become an engineer and use their knowledge and creativity to improve the quality of life for everyone and build an ideal place to live!



東涌東義工隊「友建地」與迎東邨居民大合照  
A group photo of the Tung Chung East volunteer team "Builder" and the residents of Ying Tung Estate

### 工程界多元化生涯規劃活動 Engineering Field related Career Planning Activity

東涌西義工隊「愛·與東涌行」於2024年1月邀請了九龍工業學校的學生及家長到東涌社區聯絡中心，介紹東涌西工程項目及講解工程界各種職位的生涯規劃。當日亦邀請了綠色力量總監鄭陸奇博士介紹東涌河的生物，讓學生接觸不同範疇的知識，開拓視野。

Tung Chung West volunteer team "Loving TC" invited students and parents of Kowloon Technical School to Tung Chung Community Liaison Centre in January 2024 to introduce the Tung Chung West project and share the career planning in engineering field. Dr. Cheng Luk Ki, Director of Green Power, was invited to introduce the living organisms in Tung Chung Stream. It helps students to expose to different areas of knowledge and broaden their horizons.



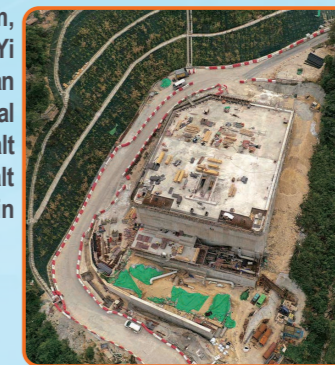
東涌西工程團隊向學生們分享工程專業的生涯規劃  
Tung Chung West project team shared the career planning in engineering field to students

## 工程進度 Works Progress

海水供應系統  
(合約編號：NL/2020/02)  
Salt Water Supply System  
(Contract No.: NL/2020/02)

海水供應系統工程正於怡東路、松仁路、文東路鋪設水管；橫向鑽掘工程、海水抽水站及海水配水庫建造工程亦在進行中。

For Salt Water Supply System, watermains laying works at Yi Tung Road, Chung Yan Road, Man Tung Road, Horizontal Directional Drill and construction of the Salt Water Pumping Station and Salt Water Service Reservoir are in progress.



海水配水庫正在建造中  
Construction of Salt Water Service Reservoir in progress

小蠔灣食水配水庫  
(合約編號：NL/2020/04)  
Siu Ho Wan Fresh Water Service Reservoir and Associated Mainlaying Works  
(Contract No.: NL/2020/04)

小蠔灣食水配水庫結構、食水管道安裝、雨水排放系統及相關擋土牆建造工程正在進行中。

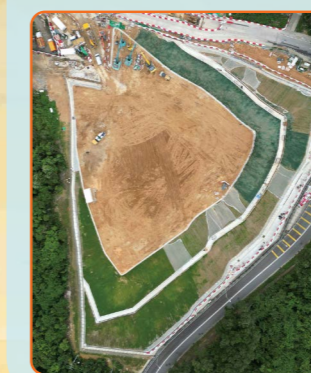
Siu Ho Wan Fresh Water Service Reservoir structure, fresh watermains, stormwater drainage system and associated retaining wall construction are in progress.



海水抽水站正在建造中  
Construction of Salt Water Pumping Station in progress

東涌谷地平整及基礎設施工程第一期  
(合約編號：NL/2020/06)  
Site Formation and Infrastructure Works at Tung Chung Valley, Phase 1  
(Contract No.: NL/2020/06)

東涌46區地平整工程已完成，並已於2024年4月交付房屋署興建公營房屋。



Site formation works at Tung Chung Area 46 were completed and handed over to Housing Department for public housing construction in April 2024.

東涌46區地平整工程已完成  
Site formation works at Tung Chung Area 46 were completed

東涌東主要基礎設施工程  
(合約編號：NL/2020/03)  
Tung Chung New Town Extension - Major Infrastructure Works in Tung Chung East  
(Contract No.: NL/2020/03)

位於新填海區的公用設施共同溝現正進行混凝土結構工序，其他進行中的工程包括：食水及污水壓力管道、雨水排放管道、區域供冷水管敷設工程、箱型排水暗渠建造工程。



公用設施共同溝現正進行鋼筋混凝土結構工序  
The reinforced concrete works at Common Utility Tunnel in progress

馬灣涌地平整及基礎設施工程  
(合約編號：NL/2020/05)  
Site Formation and Infrastructure Works at Ma Wan Chung  
(Contract No.: NL/2020/05)

現正於馬灣涌明渠進行排水管道鋪設及沙井建造工程。  
The drainage pipes laying and manhole construction works at Ma Wan Chung Nullah are in progress.



馬灣涌排水管道鋪設工程  
Drainage pipes laying works at Ma Wan Chung

大蠔交匯處  
(合約編號：NL/2020/07)  
Tai Ho Interchange  
(Contract No.: NL/2020/07)

現正於鄰近港鐵小蠔灣車廠的北大嶼山公路旁進行橋樑地基及擋土牆建造工程。其他進行中的工程包括：翔東路及深水角徑的食水及污水壓力管道敷設工程、白芒行人隧道改建工程、白芒橋結構及擋土牆工程。

Bridge foundation and retaining wall construction works adjacent to North Lantau Highways near MTR Siu Ho Wan Depot are in progress. Other ongoing construction activities include laying of fresh watermains and sewage rising mains along Cheung Tung Road and Sham Shui Kok Drive, modification of Pak Mong Subway and structure works for Pak Mong Channel Bridge and retaining walls.

