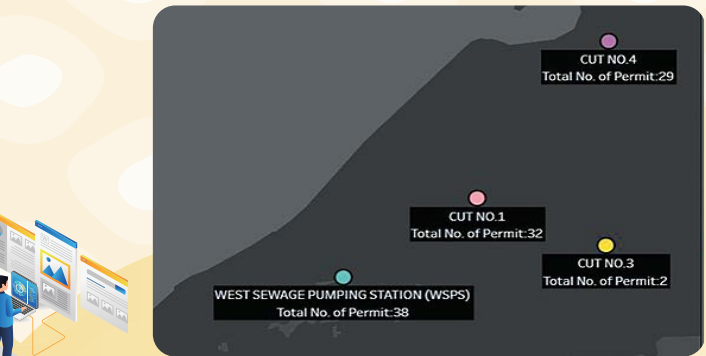


工地管理數碼化
Digitalisation of Site Management

上期介紹了東涌新市鎮擴展工程項目如何運用智能安全裝置監察高風險的工序，今期將介紹其他創新裝置，包括數碼化吊運許可證系統、智能運泥車監察系統、智能手錶及智能灑水控制系統來提升工地管理效率。除了工地現場的智能安全裝置和實時監測系統，工程團隊亦配置沉浸式四維CAVE系統讓工友接受安全訓練，令工友有置身工地的感覺，從而加強工友的安全意識。



安全智慧工地採用電子版本的吊運許可證以取代傳統紙張紀錄方式，工地管理團隊可以從數碼管理平台實時檢查不同吊運工作所需的證書及文件，例如起重機及吊具檢驗證書，以及起重機操作員和索具工人的相關訓練證書，並可透過許可證系統檢查證書是否在有效期內，以執行吊運工作。



吊運工具的位置
Locations of lifting equipment

History							
Date	Form ID	Permit No.	Location (To)	Type of Lifting Plant	Vehicle / Plant No.	Permit Status	Permit Confirmation Link
31/07/2023	721	Nil	CUT NO.1	Crawler Crane 履帶式起重機	PP-210-YongNam	Confirmed	
	722	Nil	CUT NO.1	Crawler Crane 履帶式起重機	PP-354-YongNam	Confirmed	

數碼化吊運許可證系統 Digitized Permit to Work System

The last issue introduced the application of intelligent smart devices to monitor high-risk activities under Tung Chung New Town Extension Project. This issue will introduce other innovative devices including Digitized Permit to Work system, Smart Dump Truck Management System, Smart Watch and Sensor-controlled Sprinkler System, to enhance construction site management efficiency. In addition to the intelligent safety devices and real-time monitoring system on the construction site, the project team also provides a 4D Immersive CAVE System to offer training to workers with a sense of being in the working environment to enhance their safety awareness.



The safety smart construction site adopts an electronic version of the lifting permit instead of the traditional paper-based permit for record. The construction site management team can check the required certificates and documents for different lifting works in real time from the digital management platform, such as crane and lifting equipment inspection certificates, and the relevant training certificates of crane operators and rigging workers to check if the certificates are within the validity period through the Permit to Work System, in order to carry out the lifting works.



吊運工具上的二維碼
The QR Code on lifting equipment

智能手錶

Smart Watch

透過配備「智能手錶」在工地工作，工友的實時所在位置、體溫和心跳率等身體狀況能傳送到數碼管理平台，以便監督人員掌握工友的健康狀況。當工友感到不適或遇到緊急情況時，他們可以透過「智能手錶」尋求協助，系統會立即發出訊號通知監督人員跟進。「智能手錶」能夠為工友建立一個雙向安全工作文化的環境，從管理角度出發，監督人員可以根據「智能手錶」所傳送的數據，觀察工友的健康狀況，如發現有異常，監督人員可即時安排工友得到協助；從工友角度出發，他們可以透過「智能手錶」，向數碼管理平台反饋自己的身體狀況，並在有需要時尋求監督人員的協助。因此，佩戴「智能手錶」能為工友的身體健康和安

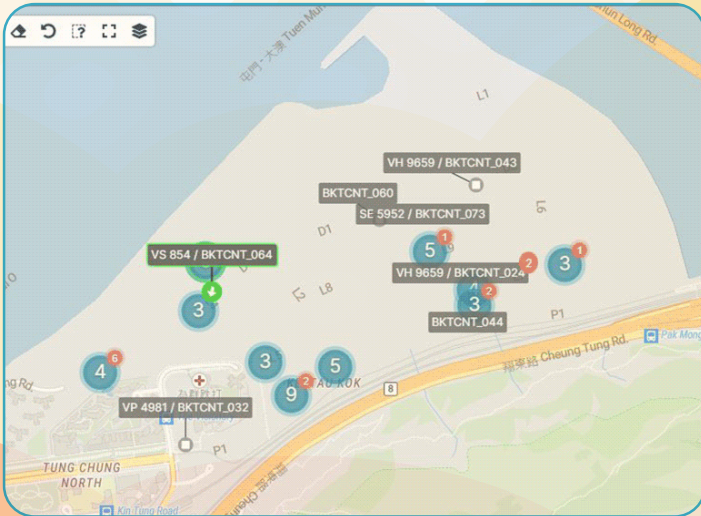


智能手錶 Smart Watch

智能運泥車監察系統

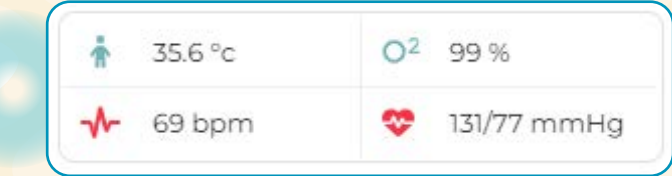
Smart Dump Truck Management System

工地內的運泥車已經安裝全球定位系統以實時追蹤、記錄和監察運泥車的位置和行駛路線。若有運泥車進入非指定位置，涉嫌傾倒物料，監察系統會即時自動以電子方式向監督人員發出通知，以便監督人員跟進調查，防止非法傾倒物料。此外，為減低對環境的影響，工地集中處理惰性拆建物料並盡可能循環再用，以舒緩香港公眾填料接收設施的運作壓力，促進工地廢棄物的管理及保護環境，從而實現可持續發展。

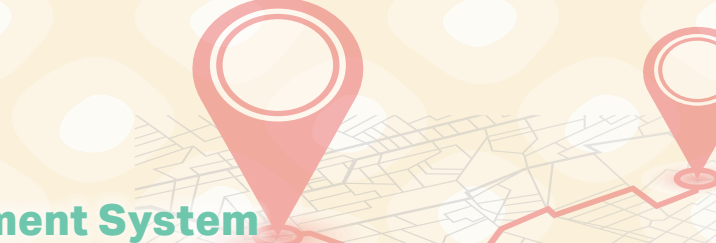


運泥車的實時位置
Real-time location of dump truck

By wearing “smart watch” to work on site, the workers’ real-time location, body temperature, heart rate and other physical conditions can be uploaded to the intelligent management platform for supervisors to grasp the health status of the workers. When the workers feel sick or encounter an emergency, they can seek help through the “smart watch”, the system will immediately emit signal to notify the supervisors for follow-up. The “smart watch” can create a bi-directional safe working culture for the workers. From the management perspective, the supervisors can observe the health status of the workers according to the data transferred by the “smart watch”. If the abnormal condition is observed, the supervisors can arrange assistance for the workers promptly. From the workers’ perspective, they can report their physical conditions to the digital management platform through the “smart watch” and seek help from the supervisors when needed. Therefore, wearing the “smart watch” can provide an extra layer of protection for health and safety to the workers.



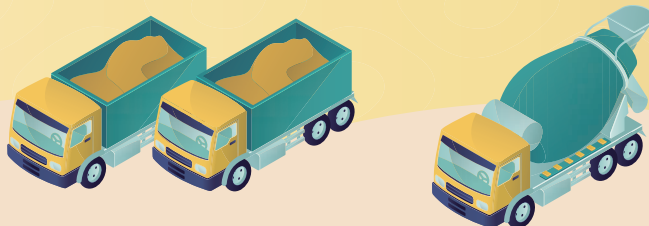
於數碼平台顯示工人的身體狀況
Workers’ physical conditions shown on digital platform



Real-time GPS tracking systems have been installed on dump trucks to track, record and monitor their locations and driving routes in real time. If a dump truck enters into a non-designated location and is suspected of dumping of waste, the monitoring system will immediately notify the supervisor automatically by sending notification to the supervisors for follow-up investigation with a view to preventing illegal dumping of waste. Moreover, to reduce environmental impact, inert construction and demolition materials would be centralized for recycling and thus relieving the capacity pressure of public fill reception facilities in Hong Kong. Hence, it can promote effective waste management and protect the environment in order to achieve sustainable development.

用戶或裝置名稱	車牌/名稱	狀	最	個	時速	位置/地址	位置更	車輛電壓
BKTCNT_064	VS 854 / BKTCNT_064	➡	11:18:37	8.0 kmpl	D4, 東涌路, 白芒	11:17:57	26.64 V	
BKTCNT_068	VL 847 / BKTCNT_068	➡	11:18:31	10.0 kmpl	白芒	11:17:49	27.59 V	
BKTCNT_021	VE 7528 / BKTCNT_021	⬇	11:18:24	0.0 kmpl	白芒	11:17:45	14.50 V	
BKTCNT_073	SE 5952 / BKTCNT_073	➡	11:18:22	0.0 kmpl	白芒	11:17:42	28.19 V	
BKTCNT_037	VL 1020 / BKTCNT_037	⬇	11:18:22	0.0 kmpl	L7, 小蠔灣, 白芒	11:17:41	27.38 V	

於數碼平台顯示的運泥車資料
Information of dump trucks shown on digital platform



智能灑水控制系統
Sensor-controlled Sprinkler System

為了減低工程對環境的影響，工程團隊在工地道路安裝了智能控塵系統。該系統能夠持續量度工地的空氣質素水平，並透過5G技術實時將現場數據如溫度、濕度等，上傳到智能管理平台。系統檢測到塵埃濃度超過預設水平時，會自動啟動智能灑水設施，達致控塵效果。我們希望透過此項創新科技，能夠減少工地對環境造成的影響。



實時空氣質素監測站
Real-time Air Quality Monitoring Station

In order to reduce the environmental impact arising from construction works, the project team has installed an intelligent dust control system on roads in the construction site. The system continuously measures the air quality level of the site in real time and uploads on-site data such as temperature, humidity, etc. to the intelligent management platform through 5G technology. When the system detects that the dust concentration reaches a predetermined limit, it will automatically activate the intelligent sprinkler system to control the dust. We hope that through this innovative technology, the impact of the construction site on the environment can be reduced.



智能灑水系統
Sensor-controlled Sprinkler System

沉浸式四維CAVE系統
4D Immersive CAVE System

創新中心配置了一個「沉浸式四維CAVE系統」(CAVE)。CAVE是一個免穿戴的虛擬實境裝置，採用高解像度的立體投影技術，創造虛擬實境，可以幫助使用者輕易掌握工地資訊和環境。CAVE可以呈現東涌新市鎮擴展工程採用的深層水泥拌合工程船的主要組件，並且為工友提供虛擬實境安全訓練。

虛擬實境安全訓練
Virtual Reality Safety Training

CAVE還配備多點觸控牆幕、動態感測裝置和手機應用程式。監督人員使用手機應用程式來啟用安全訓練軟件後，工友便可以在不同的虛擬實境工作處境中接受安全訓練。採用虛擬實境安全訓練，可以提高工人安全意識。工友一同在虛擬環境學習如何正確使用工具和裝備、主動識別和減低潛在危險，以及在得到援助前應對緊急情況，從而全面提升他們的安全意識。相比使用傳統課堂形式或文字教材的安全教學，虛擬實境安全訓練讓工友獲得工地運作的經驗，更能鞏固工友關於安全知識和技術的記憶，讓他們在日常工作亦能按不同情況，學以致用。



沉浸式四維CAVE系統 4D Immersive CAVE System

The innovation Centre is equipped with a 4D Immersive CAVE System (CAVE). CAVE is a wearable-free virtual reality headset, which employs high-resolution stereoscopic projection technology to create a virtual reality that can assist users in easily grasping information and environment of the construction site. CAVE can visualise major components of “Deep Cement Mixing (DCM)” construction vessel adopted in Tung Chung New Town Extension Project and provide Virtual Reality (VR) safety training for workers.

In addition, CAVE is equipped with a multi-touch wall, motion sensing devices and a mobile app. After the supervisors use the mobile app to activate the safety training software, workers can have safety training in various VR working scenarios. The adoption of VR safety training can increase workers’ safety awareness. Workers learn together in virtual environment on how to properly use tools and equipment, proactively identify and mitigate potential risks as well as responding to emergency situations before getting assistance, thereby increasing their safety awareness in every aspect. Compared with traditional safety training approaches involving lectures or printed materials, VR safety training allows workers to gain experience on site operation, which can better consolidate worker’s memory regarding safety knowledge and skills, allowing them to apply what they have learned according to various situations in their daily work.



深層水泥拌合法工程船投影畫面
Stereoscopic projection screen showing deep cement mixing vessel

社區聯繫 Community Engagement

「土木工程師夢之旅」升學及就業講座 “Civil Engineering Dream Journey” Career Talk

義工隊「友建地」向東涌區內高中生分享職業發展前景及工作趣事，還邀請他們參觀東涌東辦公室創新中心。

藉著參觀，學生親身了解土木工程師的工作環境及流程，更加認識到創新科技在建造工程上的應用，當中包括虛擬實境安全訓練環節，讓學生透過沉浸式四維CAVE系統和VR裝置體驗在工地工作。學生更參與綠化社區種植活動，與工程師一起親手美化工地圍板，實行「共同建設社區」的理念！

The volunteer team “Builder” shared career development prospects and work experience with high school students in Tung Chung district, and invited them to visit the InnoTCE.

Through the visit, students gained first-hand understanding of the working environment and processes of civil engineers and a deeper appreciation for the application of innovative technology in construction, including a VR safety training section that allowed students to experience working on a construction site through a 4D Immersive CAVE System and VR devices.

The students also participated in a community greening activity, working hand in hand with the engineers to beautify the work site boundary fence and putting into practice the idea of “building the community together”!



土木工程師分享職業發展前景及工作趣事
Civil engineers shared career development prospects and interesting stories about his work.



工程師為中學生講解創新科技在建造工程上的應用
The engineers explained to the high school students the application of innovative technology in construction projects.

追縱可持續大嶼
Facebook 或 Instagram
可於現場換領紀念品乙份，
詳情請參考活動網頁

Follow our Facebook or Instagram to redeem a souvenir on-site. For more details, please refer to the event webpage.

紀念品先到先得，送完即止
Souvenir is available on a first-come-first-served basis while stock lasts.

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活動網頁 Event Webpage

開心悅圓 東涌海濱花燈節

Happy Moon Lantern Festival at Tung Chung Promenade

日期及地點 Date & Location
23.9.2023 - 8.10.2023
19:00 - 22:00

東涌東海濱長廊
Tung Chung East Promenade

亮燈儀式 Lighting Ceremony
23.9.2023 19:00

月照離島迎國慶中秋綠燈會
Islands District Mid-Autumn Lantern Festival
29 & 30.9.2023 (中秋節及翌日)
19:00 - 23:00

5米高「開心悅圓」
5m-tall “Happy Moon”

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**

電郵
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:

CEDD 土木工程拓展署 | 可持續大嶼辦事處
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT | SUSTAINABLE LANTAU OFFICE

Build King SAMSUNG C&T 中國地質工程集團有限公司
BUILD KING - SCT JOINT VENTURE CHINA GEO-ENGINEERING CORPORATION

Build King 中國中鐵
Build King - Richwell Civil Joint Venture

ARUP 中國中鐵

「探索東涌」家庭同樂日及學校教育活動 Discover Tung Chung Family Fun Day and Educational Activities

「東涌西義工隊」於2023年6月舉辦了「探索東涌」家庭同樂日，邀請了東涌西工程團隊的前線員工與家人參觀東涌社區聯絡中心。小朋友在親子STEM工作坊透過製作挖掘機模型，學習了一些挖掘機的操作原理。此外，義工隊亦分別於6月和7月向兩所中學的師生及家長介紹東涌西工程項目、講解工程相關的創新科技及工程專業的生涯規劃。

The “Tung Chung West Volunteers” organized the “Discover Tung Chung Family Fun Day” in June 2023. Project team's frontline staff and their family members were invited to visit the Tung Chung Community Liaison Centre. The children learned some operation principles of excavators by making excavator models in the parent-child STEM workshop. Besides, the volunteers organized engagement activities for the teachers, students and parents of two secondary schools in June and July respectively to introduce the construction works at Tung Chung West, the innovative technologies adopted in the project works and career planning of engineering profession.



「探索東涌」家庭同樂日 Discover Tung Chung Family Fun Day



東涌西義工隊參與東涌區學校開放日
Tung Chung West Volunteers participated in Tung Chung school's open day



九龍工業學校參觀東涌西工程項目
Visit to Tung Chung West Project by Kowloon Technical School



Tung Chung New Town Extension Volunteer Team “Builder” has been actively participating in various community activities, doing good deeds, including community cleaning, caring for vulnerable groups, co-organizing activities with social welfare organizations, and donating gift packs to care for the Tung Chung community and contribute to the construction and development of the community. They received the awards of the “Excellence in Construction Industry Volunteering Collaboration” (Silver Award) and “Excellence in Construction Industry Volunteering Project (Merit Award)” in Construction Industry Volunteer Award Presentation Ceremony 2023 which was organised by the Construction Industry Council on 16 July 2023.



除此之外，海水供應系統（合約編號：NL/2020/02）和東涌西工地平整及基礎設施工程（合約編號：NL/2020/05及NL/2020/06）在社區建設和發展方面作出卓越的貢獻，改善了地區的社會環境，因此獲東涌鄉事委員頒發熱心社區大獎。

Furthermore, Salt Water Supply System (Contract No.: NL/2020/02), and Site Formation and Infrastructure Works at Tung Chung West (Contract Nos.: NL/2020/05 and NL/2020/06) have made outstanding contributions to community building and development, improving the local social environment. As a result, they received the award of the “Dedicated Community Award” from the Tung Chung Rural Committee.



工程進度 Works Progress

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)



公用設施共同溝現正進行鋼筋混凝土結構工序
The reinforced concrete works for Common Utility Tunnel (CUT) 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、地下排水系統、食水水喉安裝、斜坡鞏固及相關擋土牆等工程正在進行中。

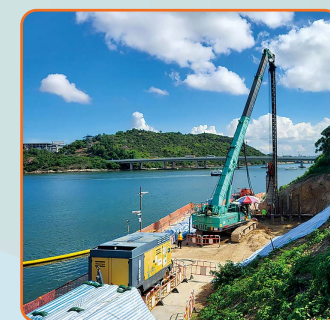
Siu Ho Wan Fresh Water Service Reservoir (FWSR) structure, sub soil drainage system, fresh watermain laying works, slope stabilization works and associated retaining wall construction are in progress.



小蠔灣食水配水庫正在建造中
Construction of Siu Ho Wan Fresh Water Service Reservoir in progress

馬灣涌工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)



東涌29A區沿海行人步道建造工程
Construction of coastal pedestrian access at Tung Chung Area 29A in progress

現正於東涌29A區北岸進行管樁工程以建造沿海行人步道。
Pipe piling works at north shore of Tung Chung Area 29A for the construction of coastal pedestrian access are in progress.



位於新填海區的公用設施共同溝及位於迎康街的西污水泵房現正進行混凝土結構工序，而文東路亦現正進行喉管敷設工程。

The concreting works for Common Utility Tunnel (CUT) and the West Sewage Pumping Station at the new reclamation area and Ying Hong Street are in progress.

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、白芒橋及擋土牆地盤工程，以及橋墩前期鑽探工程。

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



北大嶼山公路旁的擋土牆工程
Retaining wall construction adjacent to North Lantau Highway

東涌谷工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42區工地平整工程已完成
Site formation works at Tung Chung Area 42 completed

東涌42區工地平整工程已完成，並已於2023年5月31日交付房屋署興建公營房屋。
Site formation works at Tung Chung Area 42 were completed and handed over to Housing Department for public housing construction on 31 May 2023.