

Hong Kong West Drainage Tunnel Newsletter Issue 3 July 2009

**Together We Build the Drainage Tunnel
Together We Alleviate Flooding**

Progress Updates and Works Schedule

Eastern Portal at Tai Hang

The assembly of the East Tunnel Boring Machine (TBM) started in late March 2009. The TBM components were delivered smoothly from Cyberport and Chai Wan to the construction site. After the TBM assembly, the tunneling works commenced in early June 2009.

Western Portal at Cyberport

The West TBM went into operation in end March 2009. So far about 420 metres of the tunnel has been excavated.



Layout plan for Hong Kong West Drainage Tunnel



TBM assembly at Eastern Portal

Intakes

Ground Investigation and Utility Identification Works

The second phase of ground investigation and utility identification works began in late 2008 in Wan Chai and Central and Western Districts. The completion is scheduled for the fourth quarter of 2009.

Construction of Intakes

- Pipe-piles/sheet piles installation at the intake within Stubbs Road Garden (Intake No.W0) was completed at the end of June 2009. The advance excavation works for dropshaft construction have commenced.
- The advance excavation works for dropshaft construction at the intake adjacent to Smithfield (Intake No.SM1) began in early June 2009 for completion by the end of August 2009.
- The construction of the intakes at Mount Butler Road (Intake No.MB16) and at Blue Pool Road (Intake No.THR2) started in June 2009. Completion is scheduled for mid 2011.



Fully enclosed conveyor system transports spoils out of the Western Portal



Green hoarding decorates the temporary footpath next to the intake in Stubbs Road Garden (Intake No.W0)



The construction site adjacent to Smithfield (Intake No.SM1)

“Nuwa” and “Oshin” Gear Up for Tunneling Works

Naming of Tunnel Boring Machines

To encourage the public to take part in the tradition of naming TBMs and have a better understanding of the “Hong Kong West Drainage Tunnel” Project, a naming competition for the East TBM has been held. The response was encouraging and a total of 97 qualified entries were received in one and a half months. We would like to thank the public for their support and participation.



The East and West TBMs are now in operation

After adjudication, the judging panel voted “Nuwa” as the name for the East TBM. Meanwhile, the West TBM is named “Oshin” by the contractor.

Meaningful Names

“Nuwa” is a well-known mythical character and her story is related to flood prevention. In Chinese ancient myth, “Nuwa” is a goddess known for using coloured stones to seal the broken sky. Her act helped stop flooding and protect people’s lives.

Meanwhile, “Oshin” was a Japanese lady living in the Meiji era. Her life was never easy and she experienced poverty, earthquake, war and many other adversities. However, she managed to overcome the challenges by embracing all with perseverance. Every adversity was turned into opportunities.

Upholding the virtues of the heroines, the Project team of “Hong Kong West Drainage Tunnel” will work closely to embrace all challenges ahead. To contribute to a quality living environment, we strive to break through the tunnel as soon as possible.



Officiating guests at the West TBM Launching Ceremony

Launching Ceremonies of TBMs

Launching ceremonies for the West and East TBMs were held on 6th March 2009 and 20th May 2009 respectively. The officiating guests included representatives from the Drainage Services Department, the consultant and the contractor. We are also honoured to have the Chairpersons of Wan Chai, Southern and Central and Western District Councils to officiate the ceremonies. Their participation shows the significance of flood prevention.



Chairperson of Wan Chai District Council, Mr. Suen Kai-cheong (first left), presents prizes to winners of the TBM Naming Competition



Director of Drainage Services, Mr. Lau Ka-keung, briefs the media about TBM assembly and operation

TBM Naming Competition Award Presentation Ceremony

The award presentation ceremony for the TBM Naming Competition was held at the launching ceremony of the East TBM. The list of winners can be found on the Project website (www.dsd.gov.hk/HKWDT). Please visit our website to see who are the winners!

Media Visit Eastern Portal and the East TBM

To introduce the media and the public to the background, benefits and progress of the “Hong Kong West Drainage Tunnel” Project, the Drainage Services Department organized a media visit to the Eastern Portal on 23rd April 2009. The media representatives were also invited to visit the TBM assembly works inside the tunnel. About 30 media organizations took part.

Highlights of Our Technology - Tunnel Construction Methods

In the last issue, we highlighted that the main tunnel would be constructed by TBMs at Eastern and Western Portals. This time we introduce other tunnel construction methods.

Drill and Blast Method

As the name suggests, the drill and blast method involves drilling holes in the rock face and blasting the rocks by loading explosives into the holes. The explosive action breaks the hard rock.

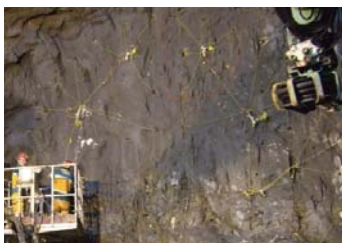
The drill and blast practice is under Government's strict statutory control, including handling and using explosives, which are a mixture of chemicals that can only be detonated by special devices. Every operational element, such as the amount of explosives, positions of drilled holes, the explosion timing, etc., requires precise calculations by professional engineers whilst the operation has to be carried out by qualified shot-firers. During the operation, vibration, noise and settlement are closely monitored to ensure the safety of surrounding buildings.

Compared to using TBM, the drill and blast method is simpler in operation and more flexible in adapting to different tunnel configuration. It is suitable for making tunnels of any shape and size in hard rock conditions and so is widely used in tunneling works in Hong Kong. Examples are the pedestrian subway connecting Admiralty MTR station and Three Pacific Place, Cheung Tsing Tunnel on Route 3 and Nam Wan Tunnel on Route 8.

In this Project, since there are tight bends when the adits are connected to the main tunnel, the use of TBM is not suitable. Thus, the drill and blast method will be deployed to construct adits. In fact, the first 160 metres of the eastern part of the tunnel was excavated by the method.



Major elements of the Hong Kong West Drainage Tunnel



Charge blast holes with explosives



The blast protection door is closed during blasting operation



Vibration monitoring is carried out during blasting operation



The blasting results in the rock being broken out



Part of the tunnel at the east is excavated by the drill and blast method

Immersed Tube Tunnel Construction Method

In the construction of immersed tube tunnel, a trench is first excavated in the sea bed by dredgers. Precast concrete tunnel units are floated to the site by tug boats and then sunk in the prepared trench. Finally, the trench is backfilled. This method is suitable for building underwater tunnels. An example is the Western Cross Harbour Tunnel.

Cut and Cover Method

The cut and cover method is a practical and economical way to construct tunnel. A trench is first excavated, and then roofed over after the tunnel is built. However, since the excavation has to be carried out on ground level, the method brings more disruption to the public and road traffic. Hence, the method is usually adopted to build shallow tunnels.



The tunnel at Kwu Tung, Sheung Shui of the MTR Lok Ma Chau Spur Line is constructed by the cut and cover method

Environmental Protection Measures

Hoarding Boards Colour Sites

With the support of the schools nearby, students' drawings have been posted on the hoarding at the construction site of the intake inside Stubbs Road Garden (Intake No.W0). The drawings not only brighten up the boards with wonderful colours, but also beautify the surrounding environment.



Colourful drawings of students decorate site hoarding of the intake within Stubbs Road Garden (Intake No.W0)

Protect the Environment Tirelessly

Noise barrier has been erected at the Western Portal to further minimize the construction impact to local residents. What's more, the conveyor system for transporting the spoils and debris out of the tunnel's western part has been fully enclosed.



Noise barrier is erected at the Western Portal to reduce noise

Site Tidiness and Safety Receive Recognition

The Project team endeavours to maintain the highest standards on workplace safety, environmental tidiness and workers' hygiene. With every member's support, we are very honoured to be awarded "The Best Construction Sites Housekeeping Award" organized by the Drainage Services Department. At the same time, the Project received "Considerate Contractors Site Award Scheme – Gold Award" and the "Outstanding Environmental Management & Performance – Merit Award" from the Development Bureau.



This Project receives "Considerate Contractors Site Award Scheme-Gold Award" and the "Outstanding Environmental Management & Performance-Merit Award" from the Development Bureau

Staying in Touch

Meeting the Public

While the Project is in full swing, we continue to keep in touch with residents, schools and property management companies in the vicinity of the construction sites to better understand their concerns regarding the Project.

"Hong Kong West Drainage Tunnel" Website

The website for the "Hong Kong West Drainage Tunnel" Project was launched early this year. Visit us at www.dsd.gov.hk/HKWDT to see the latest progress and construction arrangements.



School outreaching talks in Central and Western District in March 2009

Briefing to Schools

We visit schools in the vicinity of the construction sites from time to time. The visits aim to promote flood prevention and enhance public's understanding of the construction arrangements.

Banner Placement

As the intake construction works commence in stages, we put up banners near the construction sites to provide more information of the works.



Project banner gives construction information of the Intake at Pok Fu Lam Road (Intake No. PFLR1)

Key Facts

The Employer	: Drainage Services Department
Consultant	: Ove Arup & Partners Hong Kong Ltd.
Contractor	: Dragages Nishimatsu Joint Venture
Project Commencement Date	: November 2007
Anticipated Completion Date	: 2012

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