

TECHNICAL VISIT TO PIPE-ROOFING TUNNELLING AT SG. BUNUS PUMP GATE STATION

Organised by: Tunnelling & Underground Space Technical Division, IEM

BEM Approved CPD/PDP Hours: 3 Ref No: IEM19/HQ/004/V

Date : 26th January 2019 (Saturday)
Time : 8.00am – 1.30pm
Venue : Jalan Haji Sirat Kampung Baru, 50300 Kuala Lumpur
Transport : Coach will be provided. (Coach will depart at 8.30am sharp)

SYNOPSIS

As part of *Rancangan Tebatan Banjir Sg. Bunus*, Wilayah Persekutuan Kuala Lumpur, the Department of Irrigation and Drainage (DID), Wilayah Persekutuan has implemented a project to mitigate flooding issues in the Sg. Bunus catchment area. The main objectives of the project are to protect lives; safeguard the health and safety of residents in the community; reduce damages to structures due to flooding; and to ensure a sustainable future for the community. Both soft-engineered features and structural measures have been considered in the project, which include storage ponds, in-stream storage, planting of vegetations, tunneling, underground storage tanks and pumping stations.

A twin box culvert would act as a vital connection between Sg. Bunus and Sg. Klang acting as a control-gate structure that hoist force main drainage pumping system that lifts low water level from Sg. Bunus to high water level of Sg Klang.

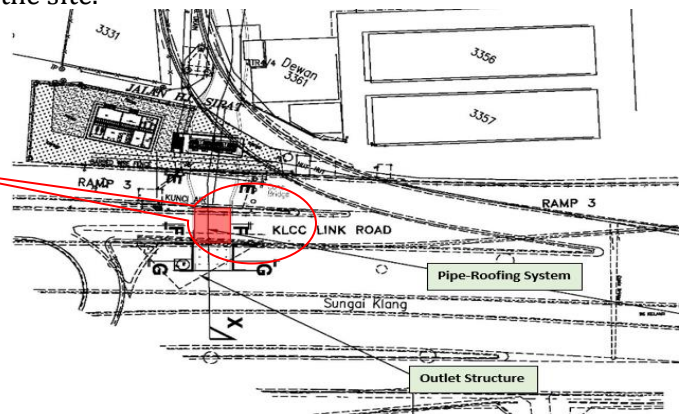
In order to construct a cast-in-situ twin box RC tunnel (serving later as a pump gate drainage culvert) within the existing Reinforced Earth (RE) wall road ramp, a temporary pipe-roofing system (Microtunnelling) is introduced.

The first of its kind in the world pipe-roofing tunneling system through RE wall road ramp has been designed for the above purpose. The system encompasses the insertion of a series of horizontal contiguous steel pipes (600mm dia.) at shallow depth beneath and through the existing highway RE wall road ramp by hydraulic steel pipe jacking, including jacking in the vertical directions.

Stability Enhancement Measures

1. Prior to the advancing steel pipes, a Cement-Bentonite mixture slurry would be grouted into the RE wall granular material of the ramp to solidify it as well as to control the loss of the granular material during the pipe jacking operation.
2. Permeation grout is injected below the RE wall strip foundation to enhance its bearing capacity.
3. Steel tie-rods are introduced in a triangular pattern which are inserted and tightened horizontally to ensemble and sandwich both faces of the RE wall panels to enhance the ramp stability against the pipe jacking forces, and both the RE wall panel faces are then covered with reinforced concrete gunite.
4. The abovementioned technique provides measures to control ground movements during pipe jacking. This is so that the settlements of both overlying and road pavement as well as the movement of RE wall panels are minimised and maintained within the acceptable limits, otherwise this would cause disturbance to the live traffic. And for that purpose, two types of monitoring systems are implemented, i.e. Automatic Total Station (ATS) & Terrestrial Laser Scanning (TLS) which have been counterchecked by precise manual levelling monitoring survey.

SAFETY REMINDER: Participants shall be well-equipped with their own PPE equipment, i.e. safety helmet, safety vest and safety boots in order to be allowed access into the site.



TENTATIVE ITINERARY – (subject to change without prior notice)

Time	Itinerary
8.00am	Gather and registration at IEM Building
8.30am	Group departing from IEM Building to site
9.15am	Arrival of participants at site
9.30am-10.15am	Project briefing
10.30am-12.30pm	Site visit
12.30pm-1.30pm	Back to IEM Building

**Commitment Fees
(Non refundable & non
transferrable)**

IEM Member : RM 50.00
Non Member : RM 80.00

- The visit is strictly limited to **30 participants** registered on a first-come, first-served basis.
- Interested participants are to register and pay online at www.myiem.org.my or register by returning the appended registration form before or by **18th January 2019** together with payment.
- Cheques are to be made payable to The Institution of Engineers, Malaysia.
- Please note that the commitment fee must be settled prior to the visit.
- After the closing date, IEM reserves the right to allocate seats to other registrants on a first-come first-pay basis.
- Intended participants are also reminded that IEM may cancel the reservation if payment is not received before the closing date.

REPLY SLIP

Chairman
Tunnelling & Underground Space Technical Division
The Institution of Engineers, Malaysia
PO Box 223 (Jalan Sultan),
46720 Petaling Jaya, Selangor

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I wish to participate in the above visit. I enclosed herewith a cheque no. for the amount of RM..... as my commitment fee for the visit.

Name of Member :

Address :

.....

.....

Company's Name :

M'ship No.:

Grade :

Tel (Office):

Tel (Mobile):

Email :

PERSONAL DATA PROTECTION ACT:

I have read and understood the IEM's Personal Data Protection Notice published on IEM's website at <http://www.myiem.org.my> and I agree to IEM's use and processing of my personal data as set out in the said notice.

I will be participating in the visit at my own risk and hereby indemnify fully The IEM from all claims arising from any injury, damage or loss that may be sustained by me.

.....
(Date)

.....
(Signature)

- Please bring along this flyer for confirmation of attendance - -Photocopies are acceptable -