

**Legislative Council Public Works Subcommittee
meeting on 21 May 2016**

187TB – Footbridge improvement works at Siu Hong Road, Tuen Mun

Supplementary Information

PURPOSE

On 21 May 2016, the Public Works Subcommittee (PWSC) recommended **187TB** be submitted to the Finance Committee (FC) for consideration. Members requested that the following supplementary information for the foundation works under the PWP item be provided –

- (a) cost breakdown of the foundation works (\$51.1 million)
- (b) depth of the 53 nos. of pile and design; and
- (c) apart from the design of the item (b) above, other pile types and piling methods that is able to be adopted in the site, and the reason(s) of not adopting these pile types and piling methods.

GOVERNMENT RESPONSES

2. Please find below the Government's responses to the matters set out in paragraph 1 above –

- (a) The foundation works include the installation of 53 nos. mini-pile each of about 43 metres (m) deep on average, construction of pile caps to support the structures of the proposed lift tower and footbridge, excavation of 8m in depth for utilities diversion works and construction of pile caps, installation of robust lateral support to avoid impacts on the adjacent railway operation and erection of double deck hoarding to ensure pedestrian safety and avoid the nearby railway operation from being affected.

We estimate the cost of the above foundation works to be \$51.1 million in September 2015 prices, broken down as follows –

<u>Works Item</u>	<u>\$ million</u>
1. 53 nos. mini-pile	28.6
2. Excavation and lateral support	16.3
3. Pile caps	1.2
4. Double deck hoarding	5.0
Total:	51.1

In view of the above required extent of the foundation works, the estimated cost is considered reasonable.

- (b) 53 nos. mini-pile are adopted in the foundation design with pile depth ranging from 25m to 46m. The average depth of each pile is about 43m.
- (c) Four foundation options have been considered in the design of the proposed project. They are large diameter bored piles (bored piles), socketed steel H-piles (socketed H-piles), driven steel H-piles (driven H-piles) and mini-piles. The considerations given in the selection of the foundation options are summarised as follows –

Bored Piles

Construction of bored piles requires large scale piling machinery, therefore requires a large working area. In view of the limited site area and headroom restriction imposed by the existing footbridge, it is not suitable for the operation of large machinery within the site. Moreover, the high load carrying capacity of bored piles are normally used to support heavy structures such as high-rise building, use of bored piles as foundation for lightweight lift tower and footbridge is not considered cost-effective. Thus, bored piles are not adopted.

Socketed H-piles

Construction of socketed H-piles requires large scale piling machinery similar to the construction of bored piles. As it the

site is not suitable for the operation of large machinery within the site, socketed H-piles are not adopted.

Driven H-piles

Construction of driven H-piles will generate vibration which may have impacts on the nearby railway operation and underground utility services including drainage pipes, water mains and high-voltage power cables. To avoid affecting the nearby railway operations and underground utility services, driven H-piles are not adopted.

Mini-piles

Construction of mini-piles only requires smaller piling machinery and generates lesser vibration. Moreover, as mini-piles are normally used to support lightweight structures, using mini-piles to support the lift tower and the footbridge in the proposed project will be more cost-effective. Therefore, using mini-piles is the most suitable foundation option in the proposed project.

Transport and Housing Bureau
June 2016