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31 December 2013

Hon CHAN Kam-lam, SBS, JP  
Chairman  
Legislative Council Panel on Transport  
Legislative Council Complex  
1 Legislative Council Road  
Central, Hong Kong

Dear Chairman,

**Concerns over the Incident of One Protruding Screw  
on Tuen Mun Road**

Thank you for referring to us the letters dated 2 December 2013 and 4 December 2013 from Dr Hon KWOK Ka-ki and Hon Gary FAN Kwok-wai respectively over the captioned incident. Our reply is as follows:

At around 9:00 a.m. on 30 November 2013, the Highways Department (“HyD”) received a report from the Police saying that the tyres of a number of heavy vehicles were punctured by a screw protruding from the expansion joint on the bridge section of Tuen Mun Road heading for Tuen Mun near Yau Kom Tau. Upon receipt of the report, the HyD immediately sent staff to the scene for follow-up actions. It was found that a screw for securing the expansion joint protruded from the road surface of Ting Kau Viaduct.

After inspection, the HyD found that the expansion joint involved in the incident was not newly installed under the Reconstruction and Improvement of Tuen Mun Road<sup>1</sup> but an original road facility already in existence prior to the works. With the assistance of the Police, the HyD immediately closed the road section concerned for urgent repairs. Upon completion of urgent repairs near 10:00 a.m. on the same day, the affected road section was re-opened at 10:30 a.m..

In the afternoon and evening of that day, the HyD arranged another road closure for inspection of other expansion joints on Ting Kau Viaduct and Yau Kom Tau Viaduct and no similar problems were identified. Subsequently, expansion joints on all vehicular bridges in Hong Kong were inspected and no similar cases were found.

At the midnight of 5 December, the road section involved in the incident was again temporarily closed for thorough inspection and repairs of the expansion joint concerned by engineering consultants and relevant experts. It was found that a piece of steel plate of the expansion joint was broken as the concrete bedding was partially damaged, loosening the left-most screw anchorage that secured the expansion joint and leading the screw to shift upward.

According to preliminary information, the HyD has figured out the possible cause of the incident as follows. The expansion joint in question was originally situated at the left roadside of the bridge. However, after the commencement of the widening works, the location concerned became part of the middle lane for temporary traffic diversion implemented earlier this year. As the location concerned is frequented by heavy vehicles, and that the expansion

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<sup>1</sup> Works under the Reconstruction and Improvement of Tuen Mun Road include the reconstruction of the section between Tsuen Wan and Sam Shing Hui, widening of carriageways and provision of hard shoulders, with a view to upgrading Tuen Mun Road to current expressway standard as far as possible. The works are scheduled for completion in phases in 2014.

joints on the old and new bridges had yet to be fully connected, as a result of prolonged period of heavy traffic loading, the concrete bedding at the edge of the expansion joint on the old bridge was damaged and thus loosening the screw anchorage. Therefore, the screw could not be securely fixed onto the steel plate of the expansion joint as originally designed. The repeated traffic loading over the location concerned throughout the year caused further wear and tear of the base of the expansion joint. Finally, the screw detached and protruded from the road surface. The HyD and its contractor are now conducting a detailed analysis to confirm the cause of the incident. Since the incident might not have been induced by one single cause, we anticipate that this cannot be ascertained until the HyD and its contractor complete the analysis in the first quarter of 2014.

According to the records of the HyD, similar incidents involving tyre damage of numerous vehicles by a protruded screw are extremely rare, making the incident this time a sporadic case. The HyD will learn from the incident, and pay more attention to monitoring the condition of expansion joints on bridges during the contractor's repairs and inspections of highway facilities in future. We are sorry for the inconvenience caused to members of the public by this incident.

The Government has all along attached great importance to the maintenance and repairs of highway and bridge structures to ensure road safety. For bridges under the HyD's purview, regular inspections and repairs (details at [Annex 1](#)) of the structures (including expansion joints) have been carried out. Any damage to bridge structures, once identified, will be repaired immediately by the HyD. The HyD will also consolidate information including bridge inspection reports, relevant records of maintenance and repairs as well as level of utilisation for subsequent analysis and assessment of the structural condition of individual bridges (including their expansion

joints), in order to facilitate the planning of medium- and long-term maintenance works and formulating relevant maintenance and repair proposals for upkeeping the bridges in good condition for safe use by the public. As regards the relevant sections of Tuen Mun Road, the HyD will request the contractor and resident engineering site staff to pay particular attention to expansion joints and similar components during construction and strengthening inspections.

Claims generated by the incident will be dealt with by the HyD under the established mechanism and procedures after the cause of the incident has been clarified.

Yours sincerely,

(Miss Sheena YAP)  
for Secretary for Transport and Housing

**Regular inspections and repairs of bridge structures**  
**(including their expansion joints)**  
**under HyD's purview**

(1) Six-monthly inspection

It mainly involves visual inspection of the condition of the deck facilities, main structures and ancillary components (including expansion joints) of a bridge to check if there is any noticeable damage requiring follow-up actions.

(2) Biennial comprehensive inspection

It mainly involves a comprehensive check of the condition of the main structures and ancillary components (including expansion joints) of a bridge via close visual inspection. Detailed tests, such as those on concrete strength, are carried out as necessary to ascertain the current condition of the bridge and to collect relevant data for subsequent analysis and assessment of its structural condition.

(3) Ten-yearly principal inspection

Principal inspections are carried out in phases by the HyD to check the main structures and ancillary components (including expansion joints) of bridges in use for over 30 years. In addition to close visual inspection, the inspection consultant also examines the hidden components of the bridge by removing the decorative cladding panels and covering materials. The principal inspection

also covers certain detailed tests such as those on concrete carbonation, chloride content and adequacy of reinforcement cover, with a view to assessing the condition of the bridge.

(4) Special inspection

On top of the above three regular inspections, the HyD will conduct a special inspection for a bridge if particular problems are identified during inspections or it is found to have been affected by serious accidents such as fire, flooding or other incidents nearby, so as to ascertain the loading capacity and structural condition of the bridge.