COMMISSION OF INQUIRY INTO THE DIAPHRAGM WALL AND PLATFORM SLAB CONSTRUCTION WORKS AT THE HUNG HOM STATION EXTENSION UNDER THE SHATIN TO CENTRAL LINK PROJECT

SECOND WITNESS STATEMENT OF MA MING CHING DEREK

FOR

MTR CORPORATION LIMITED

I, **MA MING CHING DEREK**, of MTR Corporation Limited, MTR Headquarters Building, Telford Plaza, 33 Wai Yip Street, Kowloon Bay, Hong Kong, **WILL SAY AS FOLLOWS**:

1. I am a Technical Manager in the Property Division of MTR Corporation Limited (**"MTRCL"**). From January 2015 to July 2018, I was a Construction Engineer I for Contract 1112 on the Shatin to Central Link Project (**"SCL Project"**). I am duly authorised by MTRCL to make this statement on its behalf.

2. I have previously given a witness statement dated 13 September 2018 **[B1/B355-B372]** in connection with the Commission of Inquiry into the Diaphragm Wall and Platform Slab Construction Works at the Hung Hom Station Extension under the Shatin to Central Link Project (**"Commission of Inquiry"**).

3. I am providing this second witness statement in order to respond to a number of allegations raised by Mr Jason Poon of China Technology Corporation Ltd ("**China Technology**") for the first time during the course of the Commission of Inquiry hearing. In particular, I have reviewed the hearing transcript for Day 11 at **[Day 11/83/1–Day 11/86/8]**, and I would like to address Mr Poon's allegation (with reference to a number of photos disclosed by China Technology **[D1/D607-D609]**) that through bars have not been used for the connection between the East West Line ("**EWL**") track slab and the top of the east diaphragm wall, contrary to MTRCL's evidence.

4. I confirm that the contents of this statement are true to the best of my knowledge and belief, and where I can only speak to matters by reference to MTRCL's documents due to the lapse of time, I believe the contents of those documents are true and correct.

Mr Poon's allegations during the hearing

5. I understand from the hearing transcript at [Day 11/83/1–Day 11/86/8] that, in summary:

   5.1. Mr Poon alleged that *'for the lapping bars, they must not be placed casually. We must place them in low tensile zones'*, and that the photo at [D1/D607] *'shows the failure of the bar reaching the end of the slab. They basically stop at the diaphragm wall'*. The photos were alleged by Mr Poon to have been taken in Area C2-3 or Area C2-6.

   5.2. Further, Mr Poon alleged that, with reference to the photo at [D1/D609], *'we have through-bars, about 300 metres, you see the lap or the lapping. Then, for the shorter bar down there (indicating), that's the bar fixing works; we see in D607 they stop on the retaining wall. Then for the bars at the EWL track slab, there is a starter bar there, so I can be sure that this is not the through-bar referred to by MTRC. Actually, the bar has been broken up. So there shouldn't be a short bar here, if we did have the through-bar. The through-bar should extend all the way from here to the very end'*.

   5.3. Finally, Mr Poon alleged that *'[i]f the lapping was approved, it had to be staggered laps. So one lap at the back, the other at the front; you could not be lapping the bars at the same cross-section'*.

Mid-span rebars as per working drawings

6. Mr Poon's allegations are confused and misleading, and it appears to me that Mr Poon does not have a proper understanding of the EWL track slab reinforcement details. The allegation that lapping bars were used instead of through bars, because the photos show lapping rebars stopping at the east diaphragm wall in the photos at [D1/D607-D609], is demonstrably wrong if one simply looks at the working drawings for the reinforcement details of the EWL track slab.

7. I refer in particular to working drawing no. 1112/W/HUH/ATK/C12/182 Rev. C (*'R.C. Detail of Slab Top Steel – Area E37'*) ("**182C**") [B5/B2833] issued by Team A of Atkins (China) Ltd on 27 November 2015, as extracted in **Image 1** below, which shows Area C2-6 (between gridlines 38 and 40).

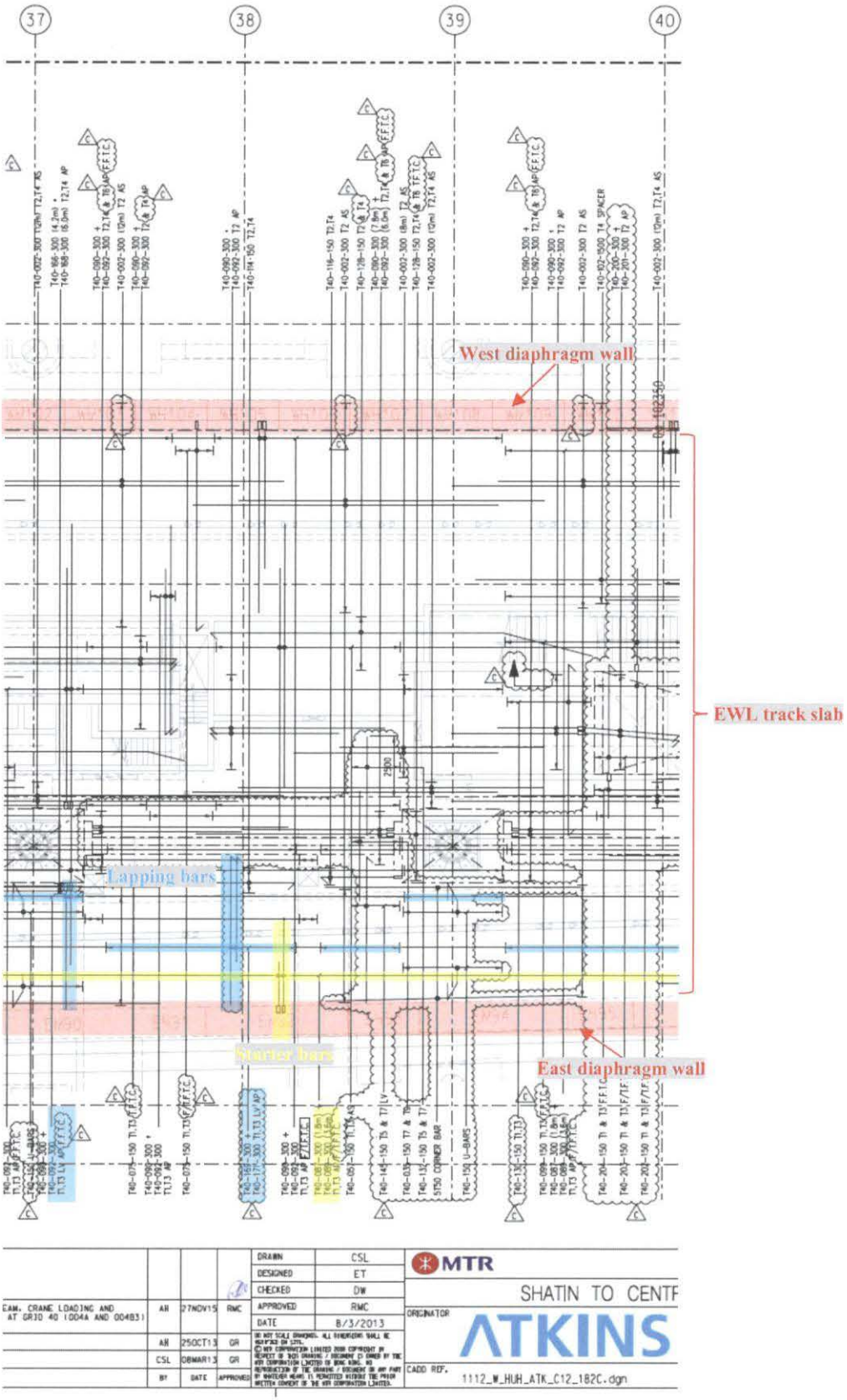

Image 1: drawing 182C (Area C2-6) [B5/B2833]

8. These working drawings show the original design intent with starter bars connected to two layers of cast-in couplers at the top of the east diaphragm wall, and these starter bars would be lapped with two corresponding layers of top mid-span rebars extending from the middle of the EWL track slab up to the east diaphragm wall. For ease of reference and in order to assist the Commission of Inquiry to understand what the working drawings show, I have added highlights and annotations in the extracts above:

   8.1. The yellow highlights in the extracts above indicate the two layers (T1 and T3) of starter bars to be connected to the top couplers of the east diaphragm wall. This reinforcement detail applies along the length of the diaphragm wall, following the horizontal line in the extracts which is similarly highlighted in yellow.

   8.2. The blue highlights in the extracts above indicate the two layers (T1 and T3) of top mid-span rebars which would extend transversally from the middle of the EWL track slab up to the east diaphragm wall. These mid-span rebars would be lapped with the starter bars connected to the top of the east diaphragm wall. Again, this reinforcement detail applies along the length of the diaphragm wall, following the horizontal line in the extracts which is similarly highlighted in blue.

   8.3. As can be seen from the working drawings, the transverse top mid-span rebars and the top starter bars were all arranged in alternate lengths, such that a long mid-span rebar/starter bar would always be placed next to a short mid-span rebar/starter bar and vice versa. This means that the lapping of the mid-span rebars with the starter bars would be staggered across the length of the relevant bay.

9. Accordingly, it is clear that the original design intent as reflected in working drawing 182C **[B5/B2833]** consists of transverse mid-span rebars at the top of the EWL track slab (arranged in alternate lengths) extending up to the east diaphragm wall, and these mid-span rebars would be lapped with the starter bars (also arranged in alternate lengths) connected to the top couplers in the east diaphragm wall. This would achieve the staggered lapping of the mid-span rebars with the starter bars across the length of the EWL track slab and diaphragm wall.

Relationship between mid-span rebars and use of through bars

10. The arrangement and lapping of mid-span rebars in the EWL track slab extending up to the diaphragm wall were generally shown in the working drawings as described above. In principle, these mid-span rebars within the EWL track slab are separate from and have no bearing on the change in the connection details (i.e. the adoption of through bars extending from the EWL slab across the top of the east diaphragm wall and into the Over Track Exhaust ("**OTE**") slab, as explained in detail in paragraphs 29 to 58 of the witness statement of Mr Kit Chan [B1/B272-B282]).

11. In other words, the fact that there were mid-span rebars extending up to the diaphragm wall does not lead to the conclusion that through bars were not adopted. Looking at the photos disclosed by China Technology and relied on by Mr Poon:

    11.1. The photos at [D1/D607-D608] (**Images 2 to 3** below) appear to show ongoing rebar fixing works in Area C2-6 (and not Area C2-3) between gridlines 38 and 40, with column N/39 in the background. The blue vertical bars shown in the photo indicate the location of the top of the east diaphragm wall (after the top 400 to 500 mm of concrete has been trimmed off). Contrary to what Mr Poon suggested, this photo simply shows the fixing of the top mid-span rebars extending up to the east diaphragm wall (circled in yellow), that is, prior to the fixing of the through bars and the lapping of those through bars with the mid-span rebars.

Image 2: site photo disclosed by China Technology at [D1/D607]

Image 3: site photo disclosed by China Technology at [D1/D608]

11.2. The photo at **[D1/D609]** (**Image 4** below) appears to show a close-up view of the rebars at the top of the east diaphragm wall. The blue vertical bars shown in the photo again indicate the location of the top of the east diaphragm wall (after the trimming off of the top 400 to 500 mm of concrete). Contrary to Mr Poon's allegations, this photo in fact shows the top mid-span rebars extending up to the east diaphragm wall (circled in yellow), alternately lapped with through bars (circled in blue) which extend from the EWL slab across the top of the diaphragm wall into the Over Track Exhaust ("**OTE**") slab. Therefore, it is incorrect to say that this photo shows *'a short bar'* or that *'the bar has been broken up'*, and this photo actually confirms the staggered arrangement of the lapping rebars as per the design intent reflected in working drawing 182C **[B5/B2833]**.

11.3. Although I can see from the photo at **[D1/D609]** (**Image 4** below) that the mid-span rebars appear to extend slightly into the diaphragm wall rather than stop at the edge of the diaphragm wall, this was simply because the mid-span rebars were cut to a slightly greater length than was required by the working drawings. The excess length was not an issue as long as the required minimum lap length was achieved (as measured from the edge of the excavation side of the diaphragm wall, in accordance with the working drawings).[1]

[1] The required tension lap and anchorage lengths for various concrete classes and reinforcement grades are set out in working drawing 1112/W/HUH/ATK/C11/001 *'General Notes for Structural Works – Concrete'*.

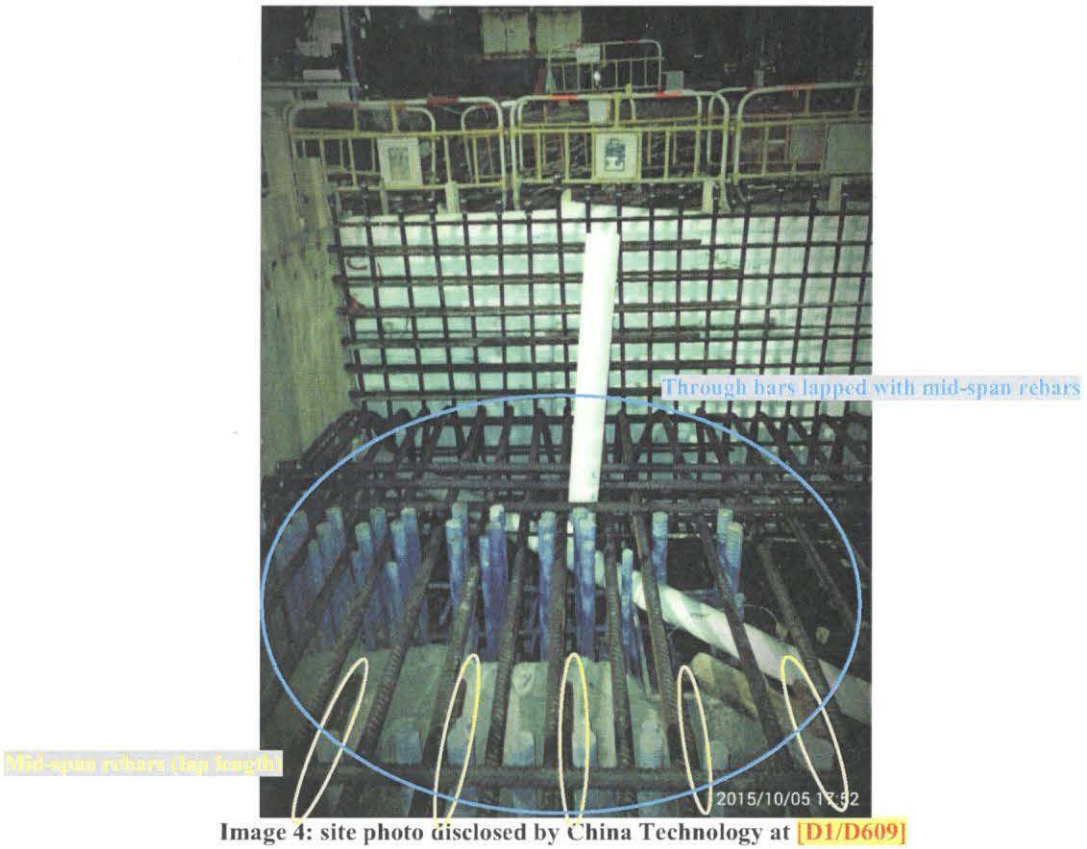

Image 4: site photo disclosed by China Technology at [D1/D609]

12. Finally, I should point out that the site photos at **[D1/D607-D609]** all seem to be taken on 5 October 2015 at various times of the day, and concrete was ultimately poured in Area C2-6 on 7 October 2015 **[B5/B2902]**. It is therefore unremarkable that the photos taken by China Technology on 5 October 2015 show rebar fixing works which were still in progress at the time.

13. On the basis of the above, it appears to me that Mr Poon has misinterpreted and misrepresented what the photos at **[D1/D607-D609]** show. The photos simply show the fixing of the mid-span rebars at the top of the EWL track slab as per working drawing 182C **[B5/B2833]**, and these mid-span rebars were ultimately lapped with through bars extending from the EWL slab across the east diaphragm wall and into the OTE slab.

14. Mr Poon's allegation based on these photos that the change in connection details is a *'story'* fabricated by MTRCL is therefore misconceived. Quite the contrary, the photos are consistent with MTRCL's evidence in this Commission of Inquiry.

15. Finally, I would again like to mention the following:

15.1. The events in question and which form the subject matter of the Commission of Inquiry took place several years ago and my recollection of every detail is not therefore perfect.

15.2. Accordingly, in preparing this witness statement I have reminded myself of the events in question by reference to various hard copy and electronic documents and materials, including contemporaneous email correspondence, meeting minutes and contractual documents and other records. I understand these materials were retrieved by MTRCL's Legal Department, with the assistance of the MTRCL's external lawyers, Mayer Brown.

Dated 27th November 2018

MA Ming Ching Derek