

Commission of Inquiry into the Construction Works at and near the Hung Hom Station Extension under the Shatin to Central Link Project (formerly 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)

Meeting of Experts No. 2 on Friday 20 December 2019 at 08:30 UK time (16:30 HK time) by V.C.

Present:

- a) at HKETC, London
- for COI Don McQuillan instructed by Lo and Lo (DM)
 - for MTRCL Mike Glover instructed by Mayer Brown (MG)
- b) at the offices of Lo & Lo, HK
- for Government James Lau instructed by D.O.J. (JL)
 - for LCAL Nick Southward instructed by O'Melveny (NS)

Purpose:

To discuss “without prejudice” relevant issues and, if possible, to produce a jointly-signed memorandum for the benefit of the Commission listing items of agreement and disagreement

COI 1

1. Coupler connections/engagement

MG, NS and DM agree that, on the basis of all the testing carried out to-date, a partially-engaged coupler assembly with a minimum of 7 threads (32mm) satisfies the strength criteria.

MG, NS, and DM agree that the permanent elongation tests carried out in the laboratories to-date are more indicative of the “bedding-in” of the threads of a partially-engaged coupler assembly at low tensile load, rather than a measure of permanent elongation i.e. “stretch”.

MG, NS and DM agree that there is an incompatibility with BOSA’s inspection protocols and their intent to achieve a full butt-to-butt connection. Anything less than a full butt-to-butt will not pass the permanent elongation test e.g. 2 threads exposed will not pass the test.

MG, NS and DM agree that HyD's acceptance criteria, based on BOSA's criteria, therefore unwittingly sanction the use of partially engaged coupler assemblies because anything less than locked, full butt-to-butt coupler assemblies will fail the permanent elongation test.

JL disagrees with the above points i.e. only full engaged couplers i.e. full butt-to-butt and locked should be used in the structural assessment

2 Shear link reinforcement and utilisation

MG, NS and DM agree that in the areas where nominal/minimum shear reinforcement is required, there is some 25% overprovision, or more, in the shear links installed.

MG, NS and DM agree that the shear links provided should not be disregarded in their entirety.

MG, NS and DM agree that the actual proven concrete cube strengths should be used in the structural shear assessment and furthermore strength gain with time is a legitimate consideration.

MG, NS and DM agree there are other beneficial factors which could be considered, eg. compressive action and arch action.

MG, NS and DM agree that codes allow, when retro-analysing (forensically) a structure, the safety factors to be reviewed e.g. to use actual loads and actual material properties.

JL does not agree with the other experts generally. He is concerned that there may not be any shear links in areas where shear reinforcement is required.

3. The horizontal construction joints (CJ)

All four experts agree that this is solely a workmanship issue

MG, NS and DM agree that nothing needs to be done but it would be prudent, from a public perspective, to remediate the two locations where poor workmanship has been identified.

JL disagrees and considers the workmanship defects must be rectified by retro-installing vertical steel dowel bars.

COI 2

4. HHS trough walls - coupler connections/engagement

MG, NS and DM agree that Yield Line Analysis is valid in this Ultimate Limit State and is not linked to a shear assessment where stirrups and ties would be required. There is no safety issue with the HHS trough walls.

JL disagrees with the other experts because the podium columns require to be protected against accidental impact. He adopts AECOM's analysis.

MG, NS and DM also recognise the need for column protection and are satisfied the existing trough walls provide the necessary protection.

5. SAT NSL Shear Capacity

MG, NS and DM agree, as per "2" above, there is adequate shear capacity. In the one potential "hotspot" identified by EIC, failure cannot occur because of the load redistribution in the three-dimensional structure. The "hotspot" is in an area where only nominal/minimum shear reinforcement is needed.

JL generally disagrees because of his concern that there may be no shear links present. As for the "hotspot" the shear failure would be "brittle" and load redistribution cannot occur.

Don McQuillan (signature)

Mike Glover (signature)

Nick Southward (signature)

James Lau (signature)