

Evening Talk on “High Impact Energy Dynamic Compaction for Infrastructure Works”

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This evening talk was delivered by Mr. Nathan Narendranathan and Engr. Ramu Andy of Infratek at The Institution of Engineers, Malaysia on 27 June 2006. The talk focused on the applications of high impact energy dynamic compaction (HIEDYC) method for infrastructure works.

The talk started with a historical development of the HIEDYC method followed by a presentation of the concepts and applications. It was gathered from the presentation material that the method was originally conceived in South Africa many decades ago. A search in the internet indeed suggested similar compaction method was used elsewhere and the method was generally known as Impact Rolling. Dr K. Rainer Massarsch gave a brief description of this method in his article on Deep Compaction of Granular Soils (<http://www.geoforum.com>). He described it as a simple, but in some cases surprisingly effective surface compaction method using a conventional tractor pulling a heavy prism-shaped mass, consisting of steel or concrete (Figure 1). The impacts generated by the rotation of the heavy mass transfer sufficient energy to achieve medium compaction to a depth of several meters. The compaction process is usually based on site-specific correlation and little documented evidence about actually achieved compaction effects is available. The impact roller can be used on granular soils including coarse-grained material such as gravel.

The speakers' experience in HIEDYC method includes the sand compaction works at Westport Container 4 in Port Klang (see Figure 2) where the results of compaction show improvement in the upper 2m. The speakers concluded that with HIEDYC, it is far more effective



Figure 1: HIEDYC Compactor (courtesy of Infratek)



Figure 2: HIEDYC compaction at Westport Container 4 (courtesy of Infratek)

than any other conventional static or vibratory roller.

The talk was followed by a lively 30-minutes of question-and-answer session. The chairman concluded the evening talk with a reminder to the participants that a number of established ground improvement methods can be considered for any particular application and each method has its own advantages, limitations and economies. Furthermore, it is possible that a combination of two or more methods can be used to meet the time constraint and budget. The selection of the method(s) is very much site-specific and performance orientated. Local experience is an added advantage. Last but not least, instrumentation and monitoring also play a vital role in a successful ground improvement project. The event ended with a vote of thanks and a presentation of momento to the speakers. ■