

Correction Factor to Enhance the Non-Standard Hammer Effect Used in Standard Penetration Test

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Abstract : The weight of the SPT hammer is standard (0.623kN). The locally manufacturer drilling rigs use hammers, sometimes deviating off the standard weight. This affects the field measured blow counts (Nf) consequentially, affecting most of correlations previously obtained, as they were obtained based on standard hammer weight. The literature presents energy corrections factor (η^2) to be applied to the SPT total input energy. This research investigates the effect of the hammer weight variation, as a single parameter, on the field measured blow counts (Nf). The outcome is a correction factor (η_k), equation, and correction chart. They are recommended to adjust back the measured misleading (Nf) to the standard one as if the standard hammer is used. This correction is very important to be done in such cases where a non-standard hammer is being used because the bore logs in any geotechnical report should contain true and representative values (Nf), let alone the long records of correlations, already in hand. The study here-in is achieved by using laboratory physical model to simulate the SPT dripping hammer mechanism. It is designed to allow different hammer weights to be used. Also, it is manufactured to avoid and eliminate the energy loss sources. This produces a transmitted efficiency up to 100%.

Keywords : correction factors, hammer weight, physical model, standard penetration test

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