



Sustainable Technology

Dynamic Replacement

Dynamic Replacement is the variation of the technique of Dynamic Compaction, that of delivering impact energy to the ground by means of dropping a large mass from a significant height, that is applied in soft, saturated cohesive soils and soft organic soils. The effects of the impacts from a falling mass that generate the benefits of Dynamic Compaction are not realized in these types of ground and instead Dynamic Replacement offers a means of creating stiff, high modulus inclusions within a soil mass affording a much greater global modulus in the ground.

The technique involves the creation of holes in the ground platform from impacts from the falling mass and subsequently backfilling those holes with non-cohesive material such as crushed rock or gravel and repeating this process to create large diameter columns, 2.5 – 4 metres within the soil mass, which besides introducing high modulus inclusions into the ground also create drainage paths within the soils.

Columns can be formed to depths of 7 metres beyond which the lateral spread at the bases of the columns counteracts further penetration.

The most spectacular application of Dynamic Replacement, where, despite stringent settlement criteria, it was used as an alternative to piling, has been for the foundations for the tracks of the Ariane Rocket Carrier (2000 tonnes) in French Guyana.

Dynamic Replacement offers a very cost competitive method of ground improvement.



DYNAMIC REPLACEMENT



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