

US firm designs new dynamic pile test device

US PILE INTEGRITY testing company Goble Rausche Likins and Associates has designed and built a new dynamic loading system to test the capacity of bored piles.

Newton's Apple consists of a 6m high guide frame and a modular ram, the weight of which can be varied between 5t and 20t. With a free release drop height of up to 2.7m, GRL says it can generate ultimate test loads up to 2000t.

After the ram is lifted by a crane to its top position, its weight is transferred to the frame before testing begins. Alternatively, the ram can be dropped directly from the crane.

The system is instrumented to obtain a precise reading of pile top force, which means piles do not have to be excavated to fit strain sensors. GRL says the method is also a more accurate way of calculating force, which can be affected by concrete quality when using strain. Comparisons between measured ram force and the force calculated from pile strain measurements have been in close agreement, the firm says in its latest newsletter.

A series of tests were run at the National Geotechnical Experimentation site at the University of Massachusetts in September



last year, using a 7.5t ram.

A 25t crane helped assemble and move the loading system from shaft to shaft. GRL unloaded the system from the truck, tested three 900mm diameter, 17m long shafts and reloaded the truck, all

within seven hours.

In Houston, Newton's Apple has also tested piles of 350-450mm diameter and up to 25m long for Berkel & Co Contractors. Proof loads of up to 400t have been generated with the 7.5t ram.