Osterberg Load Cell

The NOVA Award was presented to the Osterberg Load Cell for inNOVAtion in performing in-situ testing of soil capacity.

Field tests to verify the load-carrying capacity of heavy building foundations are time consuming, costly, interfere with other work on the site, and have inherent safety risks.

In the mid 1980's, Dr. Jorj O. Osterberg, now a Professor Emeritus of Civil Engineering at Northwestern University, developed a test method to speed and simplify testing of heavy foundation piers, while making the process safer and capable of delivering accurate measurement of both side-friction and end-bearing components of total load resistance.

Dr. Osterberg's method places a load-generating hydraulic cylinder, the load cell, at the bottom of a foundation pier. The load cell, which will expand to exert a force both upward and downward, is welded to the end of a steel H-section and lowered into a hole drilled for the test shaft. The shaft is then filled with concrete, and cured.

The load test is performed by actuating the hydraulic cylinder to exert pressure on the soil. Strain gauges and digital "dial" gauges measure key displacements. The downward force of the load cell creates displacement which translates into end-bearing capacity of the soil. Upward force from the top of the cell creates displacement of the test pier which translates into an accurate measure of the side-friction component of load resistance.

The Osterberg Load Cell and the "Upside-Down Load Test" helps foundation designers create more cost-effective foundations and reduces the time needed for testing.

The Osterberg Load Cell's unique loading mechanism, from the "bottom-up", eliminates the need to erect hazardous dead loads and provides accurate measure of both sidewall friction and end-bearing capacity.

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