Horizontal Loads on Piles


Subdrainage and Soil Moisture


LETTERS

Soil Bearing Footing Area Tests

The following letter is a response to a letter on the same topic from Gay D. Jones, Jr., of Howard Needles Tammen and Bergendoff in Kansas City, Mo., which appeared in the June 1979 issue of the Geotechnical Testing Journal.

To the editor:

Regarding Jones's interest in a portable testing device for verification of bearing capacity, the writer presumes that Jones does not intend that this be substituted for the practice of preconstruction site investigation with borings.

If a professional site investigation has been done, the problem of verification and approval ought to be easily solved.

A geotechnical engineer who has recommended that footings be founded on a particular soil and proportioned using some allowable pressure has or should have a theory of the soil upon which the footings will rest. He can define his theoretical soil in such a way that it can be identified by measurable things. Otherwise he has not done a professional workup.

In the case of natural deposits, in the writer's experience, it is possible to differentiate between, for example, a softened surface layer of clay and the underlying stiff unsoftened material by using some or all of the following quantitative tests: elevation or depth of soil in question, dry density, moisture content, penetration resistance (with a calibrated hand penetrometer), and Torvane test results. All these tests can be done with portable equipment in minutes, and the results compared with the geotechnical engineer's theory of the soil. Simple field identification tests, such as those often used with the Unified Soil Classification System, are also useful, and color can provide a clue. This may be easier for the geotechnical engineer than for, say, a nonspecialist construction inspector, but the geotechnical engineer can or should be able to reduce this theory to writing, giving however many criteria are required to identify the soil he has in mind, even if it takes another geotechnical engineer to apply the criteria.

In the case of fills, if the geotechnical engineer has done a thorough workup, the mere fact that the fill meets his moisture and density specifications ought to be sufficient to establish the presumption that it has the bearing capacity he has attributed to it. This is done daily in pavements.

If a professional site investigation has not been done, or a fill has unknown composition and compaction, the geotechnical engineer is not obliged to guess for anyone's account, and tests of the surface are as likely to be misleading as not. Who needs this kind of work?

The opinions expressed herein are those of the writer and do not necessarily reflect the opinions of Spencer J. Buchanan and Associates, Inc.

Very truly yours,

Robert E. Bingham
Spencer J. Buchanan and Associates
Bryan, Tex.