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Sent: April 14, 2011 11:43 AM

To: wehodge@shaw.ca

Subject: the Water in the Soil

Hello, Bill:

I am enjoying your series of articles in Geotechnical News; I am looking forward to future episodes!

In your latest article (March), you write: "For some time past I've been hoping to establish an axiom of saturated soil behaviour that says: Increasing pore water pressure is not the *cause* of failure -- it is the *result* of failure." I believe that this is more than an axiom; more like a fact. In that regard, I wanted to call your attention to the following paper if you haven't already seen it: Eckersley, D. (1990) "Instrumented laboratory flowslides", *Geotechnique*, Vol. 40, No. 3, pp. 489-502.

I believe a few of our geotechnical brethren have figured out the correct cause-and-effect. But I applaud your efforts, because I think most have not. Most geotechs still think piezometers can warn them of a pending flowslide; similarly, some have installed drainage zones in slopes and foundations thinking that liquefaction can be prevented by draining off the pore pressure. As your experiments and analyses demonstrate, if the pore pressure goes up, it is already too late -- the collapse is in progress!

The analogy I use is column buckling -- strain gauges are great for measuring the stress, but they will not warn you if the column is about to buckle; for that you need some extra knowledge from elastic theory. So, I have used the term "soil buckling" to emphasize that simply observing pore pressures or even measuring displacements will not tell you if a flowslide is about to happen. This is a case where the traditional "observational method" will not work.

Regards,

David