

Editorial

To Correct Or Not To Correct

...for influence of membranes in the triaxial test is the question. This question came up in the meeting of ASTM Committee D18.05 on Structural Properties of Soils at the Annual Meeting in Louisville this last June. It also was the subject of some discussion at the Symposium on Advanced Triaxial Testing which immediately followed the Annual Meeting.

Many of us either ignore making corrections (even when testing very soft soils) or blindly use corrections such as those in the Standard Test Method for Unconsolidated, Undrained Compressive Strength of Cohesive Soils in Triaxial Compression (D 2850). Corrections of various and sundry types have occurred in the literature over the years.

Corrections for membranes are based on a number of assumptions, many of which are only approximately true. How many of us are aware of these assumptions when we perform our tests? For example, most corrections assume that the membrane is in a relaxed state prior to the beginning of the test. Yet, when installing a membrane on a soft cohesive soil, we "stretch" it over a membrane expander, "stretch" it further by applying a vacuum to the space between the membrane and the expander, and then allow it to enclose the specimen by releasing the vacuum. Don't these processes cause the membrane to apply some axial and lateral confinement to the specimen immediately? Don't differences in diameter between the specimen and the unstretched membrane have an influence on test results?

I believe that the issue of membrane corrections needs to be brought before all those engaged in triaxial testing and resolved. Once resolved, meaningful and more accurate standard test methods on triaxial testing should result.

As a step toward resolution, I am inviting all those interested to provide me with their input. Answers to the following questions are solicited:

1. What specification should be placed on the unstretched diameter of a membrane relative to the initial diameter of the specimen?
2. What should be the allowed maximum thickness of membrane relative to the diameter of the specimen?
3. Should common prophylactics be acceptable as membranes for testing the 35.7 mm (1.4 inch) diameter specimens according to the answers given to Questions 1 and 2, above?
4. For soft cohesive soils, a membrane expander is usually used to assist in placing the membrane over the specimen. What tech-



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niques should be written into the procedures to minimize both disturbance and preloading of the specimen?

5. What corrections to account for membrane effects should be applied, if any, to account for:

- (a) diameter differences between specimen and unstretched membrane?
- (b) diameter and length changes caused by consolidation (or swell) of the specimen during the saturation and consolidation phases of tests that include these phases?
- (c) increased (decreased) lateral confinement caused by lateral strains due to axial loading (unloading)?
- (d) axial load carried by the membrane?

6. How should the properties of the membrane material be determined?

7. Do membrane properties change significantly by contact with chamber and/or pore fluids?

8. For high shear strengths, membrane corrections are inconsequential. Below what level of shear strength should membrane corrections be required?

Where possible, please document your answers by giving reference to the published literature or providing a rationale. Your suggestions for the above questions should be sent to me before *31 Dec. 1986*. My address is given below.

In addition, I will be submitting these questions to selected groups and individuals worldwide through the members of the Editorial Board. I will ask a panel of persons to review the responses and prepare an article for the Testing Forum section of the Journal to share the results with all of the readership. Responses also will be used to assist Committee D18.05 on and other ASTM committees in their standards writing processes.

With your assistance, we will try to arrive at a consensus on whether to correct or not to correct and if making corrections, how to make them with the greatest accuracy.

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