

## RATE-SENSITIVE BEHAVIOR OF A NATURAL SOFT CLAY

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The purpose of this paper is to present the rate-sensitive behavior of a natural soft clay, of the Loire Valley in Saint-Herblain. The study is based on extensive experimental data and the modeling of the mechanical behavior by means of an elasto-viscoplastic model based on the framework of Perzyna's overstress theory [2] and Modified Cam-Clay model [3].

In the first part, we present briefly the EVP model and the modeling procedure for experimental tests such as triaxial test, oedometer test and pressuremeter test. The EVP model is built by using the concept of static yield criterion and dynamic yield criterion [1]. The numerical analysis of the parameter influence on the test results is then carried out. Special attention is given to the influence of the two viscous parameters. A method of determination of the EVP model parameters is proposed to simulate tests.

Then, We present several types of tests performed on the natural Saint-Herblain clay: one-dimensional consolidation test with different strain rates, long term oedometer test with different vertical stresses, triaxial compression test with different strain rates, creep triaxial test and pressuremeter test with different stress rates. The rate-sensitivity of the clay is analyzed from both experimental data and model prediction. The strain rate parameter  $\rho$  [4] and the secondary compression index  $C_{ae}$  are studied in relation with the viscous parameters.

Good agreement between measured and predicted results is obtained in the simulation of the different tests, which shows that the proposed model can be adopted for describing the rate-sensitive behavior of soft clay along monotonic loading.

### References

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