Interaction between long piles and the adjacent soil has a spatial and temporal nature. This phenomenon is based on a set of non-linear and rheological properties of soils. Distribution of lateral forces between the surface and the pile toe is heavily dependent on the above properties. The process of formation of the stress-strain state around the pile can demonstrate decaying, constant or progressive velocity depending on the rheological processes in the soil that may be accompanied by hardening and softening processes at one and the same time. These processes may be caused by destruction and restoration of ties between clay soil particles, soil compaction and de-compaction. Predominance of the process of hardening leads to damping, while pre-dominance of the process of softening causes progressive destruction. Description of this multi-component process depends on the rheological model of the soil.

This research is based on the modified rheological model originally designed by Maxwell. The authors consider solutions to the problem of quantification of the stress-strain state of soil around the pile and their interaction. This research makes it possible to project motion patterns of long piles over the time and evaluate the limit of their long-term bearing capacity.

**Key words:** creep, bearing capacity, viscosity, deformation velocity, hardening, softening, compaction, stress-strain state.

**References**


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