INTERACTION BETWEEN SOIL AND BURIED PIPELINE

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ABSTRACT

The use of buried pipelines is increasingly common and plays an important role in oil industry. Its good structural performance is essential to oil or gas flow. From the engineering point of view the stress-displacement relation in buried pipelines is very important to ensure system integrity.

The definition of the maximum load to be used in pipeline is very important in the design, since the displacement and rupture mechanisms change significantly when changing the pipeline depth.

In this paper the theories of plasticity and limit analysis will be used to study the mechanisms involved in the rupture of buried pipelines. Instead of estimating the burden of interaction from the theory of bearing capacity of shallow foundations will also examine the possibility of lateral loads on piles.

The limit analysis simulations will use a nonlinear programming algorithm developed specifically to simulate the problem with mixed finite element in velocity and stresses. The results demonstrate the importance of lateral loads.