

## **Response of underground pipes due to blast loads by simulation - an overview**

### **Abstract**

This paper has analytically and numerically examined the static and dynamic responses of underground pipes due to blast loads. The various components of blast considered are blast load, ground media, pipes and soil-pipe interaction. Using Unified Facilities Criteria (2008), blast energy and ground movement parameters for various types of explosion for short distance were estimated. Other numerical tools for predicting blast energy and solving dynamic equation were equally suggested. Available technical manuals for designing structures to resist the effects of accidental explosion were given. Methods of analysis of simulated buried pipes subjected to blast loads were considered. Analytical method may not provide accurate result owing to its limitations; consequently, numerical methods overcome the limitations of analytical methods. Numerical methods considered for solving dynamic equilibrium equation are the central difference and finite element methods. The solutions to the dynamic equations using these two numerical methods can be achieved using ABAQUS numerical code. Apart from Abaqus code, other numerical tools that could be used to study the response of underground structures (pipes) by modeling/simulations were also suggested. © 2010 ejge.