

# **Mahmud Amer Al Tarhouni**

## Thesis

Liquefaction and post-liquefaction behaviour of gold mine tailings under simple shear loading

## Abstract

Understanding the liquefaction and post-liquefaction behaviour of mine tailings is important for the safe design of tailings dams. An experimental study was carried out to investigate the liquefaction and post-liquefaction behaviour of gold mine tailings under simple shear loading conditions. Monotonic loading tests indicate that the tailings are susceptible to liquefaction especially at high void ratios and consolidation pressures. Cyclic loading tests show that the cyclic resistance ratio increases as the void ratio decreases at a given consolidation pressure. However, the behaviour of the tailings under cyclic loading appears to be relatively insensitive to the consolidation pressure. Cyclic resistance ratios for samples that were subject to significant matric suctions in simulated evaporation and rain events were considerably higher than those without a hydraulic stress history. The shear strength at post-liquefaction increases as the consolidation pressure increases at a given void ratio. In contrast, increasing consolidation pressures yield lower liquefied strength ratios.

## Degree

M.A.Sc.

## Completion

2008

## Supervisors

Sivathayalan, Simms