



## Clay Sand Soil Liquefaction (Tabriz Najm Project)

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### Abstract

Liquefaction is a phenomena in which high pore overpressure is developed due to seismic cyclic loading (and reaches to the limit of effective vertical enclosing pressures), leading to intensive loss of stability and rigidity. Iran is located on the earthquake-prone belt of Alpine – Himalayan which made earthquake event as a most damaging disaster in the country. Occurring different earthquakes in recent years like Manjil, Ardabil, Bam, Ahar ... confirms this problem.

This study investigates liquefaction in the commercial project of Najm in Tabriz. For this purpose software model of Flac is used for analysis

**Key words:** Liquefaction, Flac, Najm project, Numerical methods

### 1. Introduction

To this date, most of the studies about liquefaction have been focused on partially purified sands. Few researches investigated soils with granularity ranging from silty to silt with or without clay content. Often these fine-grained soils are seen in engineering works, and different evidences indicate the possibility of liquefaction of these soils. Since the designers of earthquake resistant infrastructures are often in the environments with fine-grained soils, engineers must know the soils susceptible to liquefaction. This study considers simple criteria based on “key” parameters of soil which are involved in differentiating liquefactionable soils from in-liquefactionable ones .

Liquefaction is an important factor in damaging constructions in an earthquake in places located on sandy loos and saturated alluviums. Specifications of substrate soil is a significant factor in determining liquefaction of a certain area. To have a reasonable estimation of liquefaction of certain area requires a true understanding of soil specifications in that area. This understanding can include type of layers, granularity of the soil, strength properties, level of groundwater, tension in the depth, and CPT or SPT indicators. Understanding the structure of soil layers is initiated with