

Studying the Probability of Liquefaction Between Western-Shaft and C2 Station zone (2nd Line of Tabriz Metro)

Samad Narimani Qurtlar^{1*}, Alireza Talebinejad², Hamid Chakeri³

1. MS student of Rock Mechanics, Sahand University of Technology
2. Project Manager of 3rd & 4th Line of Tabriz Metro, Iman Sazan Co
3. Assistant professor of Sahand University of Technology

samad.narimani65@gmail.com

Abstract

One of the most dramatic causes of damage to structures like buildings, bridges, fundamental structures and ... during earthquakes is the occurrence of liquefaction. In this study, by using Novoliq software and results of in-situ tests such as SPT, have been assessed the probability of liquefaction between Western-Shaft and C2 Station zone (2nd line of Tabriz metro). In this research, have been excavated 28 borehole and 4 wells. Results showed that, if Tabriz Fault was active, occurrence of liquefaction would be happened. Also have been proposed that in this zone, between Western-Shaft and C2 zone, according to economics of project, performance possibility and facility, technical and performance limitations, it is better to use compact grouting for ground improvement.

Keywords: Liquefaction, Standard Penetration Test (SPT), Novoliq, 2nd line of Tabriz metro

1. INTRODUCTION

Vast damages of deformations of liquefaction during earthquakes have been caused that this phenomenon to be the most important, complicated issues in seismic method in geotechnical engineering. Recognizing this phenomenon and studying its formation conditions have been done since pre several years. while deposits of saturated soil because of seismic movements, quickly and bilinearly were sheared, then water pressure increased inside the pore of soil. In weak saturated incohesive soils, pore water pressure increases quickly and it is possible to access that limit which particles be separated from each other and for the moment, soil resistance and toughness destroy completely. This phenomenon which is defined as Liquefaction, is shown in picture 1 [1]. Recently years, some lab and field tests have been done for assessing the liquefaction resistance of soils. some of field assessment methods include Standard Penetration Test (*SPT*), Cone Penetration Test (*CPT*) and Geoseismic test by measuring the shear wave velocity. In this paper by using the results of *SPT* tests, effective geotechnical factors for assessing the liquefaction potential studied by using different methods between western-shaft and C2 station zone of 2nd line of Tabriz metro. Then most conservative method for defining factor of safety for liquefaction probability has been specified [2].

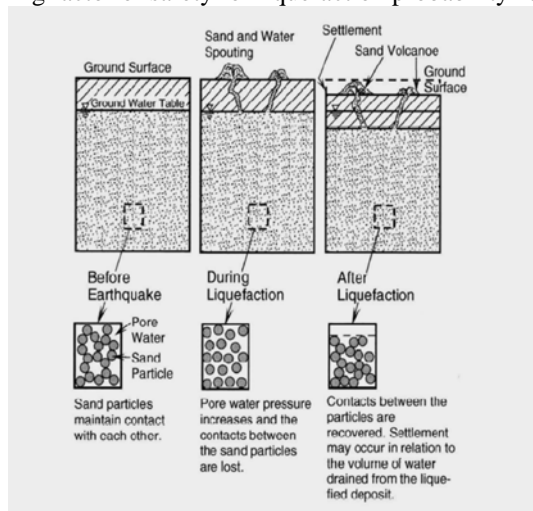


Figure 1: formation of liquefaction [1]