

Abstrak

Likuifaksi adalah suatu fenomena dimana daya dukung tanah berkurang akibat gempa yang sedang berlangsung. Likuifaksi ada dua jenis yaitu *flow liquefaction* dan *cyclic mobility*. Lembaga yang berperan dalam hal ini di Indonesia perlu memahami lagi salah satu jenis likuifaksi yang terjadi yaitu *cyclic mobility*. Ada 4 daerah yang akan menjadi perbandingan dalam penelitian ini. Hal pertama yang dilakukan saat menganalisis likuifaksi adalah pengecekan terhadap potensi rentan dari karakter tanah. Pengecekan potensi rentan memakai empat metode yaitu; metode Seed et al. Chinese criteria metode Bray dan Sancio, dan Tsuchida. Jika tanah menunjukkan kerentanan likuifaksi maka penelitian dilanjutkan ke state criteria, jika tidak ada kerentanan tidak usah dilanjutkan. state criteria. Penentuan tipe likuifaksi dapat dilihat dari metode state criteria pada grafik triaxial hubungan antara *axial strain* (ϵ_a) dan *deviatoric stress* (q). Metode *cyclic strain approach* selanjutnya dilakukan untuk pengecekan berikutnya. Metode ini menggunakan dua variabel yaitu *cyclic resistance ratio* (CRR) dan *cyclic stress ratio* (CSR). Variabel tersebut didapat dari perhitungan pada tes lapangan. Tes lapangan yang dipakai adalah data bora tau *N-SPT*. Penelitian ini menganalisa potensi likuifaksi pada tanah berdasarkan *safety factor* yang nanti akan didapat, yang pada akhirnya membuktikan bahwa likuifaksi yang terjadi adalah *cyclic mobility* dan berpotensi pada tanah lempung. Lalu dapat disimpulkan bahwa dua daerah berpotensi, sedangkan dua daerah lainnya tidak.

Kata kunci: likuifaksi, *cyclic mobility*, state criteria, kerentanan likuifaksi, potensi likuifaksi, CSR, CRR, factor safety, tanah lempung.

Abstract

Liquefaction is a phenomenon where the carrying capacity of the soil decreases due to an ongoing earthquake. There are two types of liquefaction, namely flow liquefaction and cyclic mobility. The institution in Indonesia that involved in this case, needs to understand again one of the types of liquefaction that occurs, namely cyclic mobility. There are 4 locations in Indonesia that are compared, which one has the potential. The first thing to do when analyzing liquefaction is to examine the liquefaction susceptibility of the soil characteristics. Vulnerability examination uses four methods, namely Seed et al, Chinese criteria, Bray and Sancio, and Tsuchida method. If the soil shows liquefaction susceptibility, the research is continued to state criteria, if there is no vulnerability, it does not need to be continued. state criteria. The determination of the liquefaction type can be seen from the state criteria method in the graph of the relationship between axial strain (ϵ_a) and deviatoric stress (q). Evaluation of liquefaction potential using the cyclic strain approach method. This method uses two variables, namely the cyclic stress ratio (CSR) and the cyclic resistance ratio (CRR). These variables are obtained from calculations on field tests. The field tests used are the cone penetration test (CPT) and the standard penetration test (SPT). This study analyzes the potential for liquefaction in the soil based on the safety factor that will be obtained later. The results of this study indicate that the type of liquefaction that occurs is cyclic mobility and there is potential for liquefaction in clay soils. And then the results from the analysis proved that there are several areas potentially had cyclic mobility, while others no.

Keywords: *liquefaction, cyclic mobility, state criteria, liquefaction susceptibility, liquefaction potential, CSR, CRR, safety factor, clay soils.*