

Abstract: The phenomenon of cyclic soil liquefaction is widely studied, but yet not well understood. The great concern of liquefying soils is the potential impact on structures and their stability. Apart from introducing liquefaction phenomenon, aim of this report is to present an evaluation of liquefaction potential for a site *Belle Plaine*, located in Guadeloupe. For this purpose, laboratory 3S-R (Laboratoire Sols Solides Structures-Risques) performed three piezocone tests (CPTU) and installed four pore pressure sensors on the site of Belle Plaine. The obtained measurements were subsequently analyzed for liquefaction potential, which forms the main subject of this report. The interpretation of soil profile is based on general evaluation of CPTU readings, dissipation tests and on classification charts. According to these, Belle Plaine profile is divided into different soil horizons with sand layer and clay layer representing main two soil types. Subsequent evaluation of liquefaction potential is done according to semi-empirical methods by Seed and Robertson and by classical graphical evaluation methods. As a result, the Belle Plaine site is claimed to be potentially liquefiable from depth of 2.5 to 8 meters. This liquefiable horizon is formed by very fine clean sand with possible addition of fines in transition zones (i.e. zones where one soil type verges into another). Second part of the report deals with simplified modeling of seismic response of Belle Plaine site. This is done in order to compare earthquake loading predicted by a numerical code PLAXIS Dynamic with earthquake loading obtained traditionally from an equation by Seed and Idriss (1971). The results were used to redefine the factor of safety for Belle Plaine site and a comparison between empirical and numerical results was made.