Shaking table test of soil liquefaction in Southern Yogyakarta

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Abstrak

On 27 May 2006, a 6.3 Mw earthquake hit Yogyakarta Special Province, Indonesia. This earthquake triggered a unique phenomenon, i.e., liquefaction. In order to learn from that earthquake event, an intensive study based on an experimental test of liquefaction potential using a shaking table was conducted. This study focused on the sandy soil in southern Yogyakarta, i.e., Opak River Watu, where liquefaction events occurred in 2006. Dynamic loads with accelerations from 3 to 4 m/s2, vibration frequencies from1.4 to 1.8 Hz, and vibration times of 8, 16, and 32 seconds were applied. All dynamic loads were combined to observe the liquefaction mechanism, time to start liquefaction, time to start dissipation, and liquefaction duration. The results show that liquefaction can potentially occur in the sandy soil of Opak River Watu. The applied load strongly influences the potential for liquefaction, time to start liquefaction, time to start dissipation, liquefaction duration, and excess pore pressure ratio.