



## **A Study of the CPT-based Liquefaction Potential Index**

C.S. Ku (1) and Y.Y. Chi (2)

1. Department of Civil Engineering, I-Shou University, Kaohsiung, Taiwan.  
(csku@isu.edu.tw/ Fax: 886-7-6577461 / Phone:886-7-6577461-3302
2. Department of Land Management and Development, Chung Jung Christian University, Tainan, Taiwan

Liquefaction Potential Index ( $I_L$ ), was defined by Iwasaki et al. (1982), is calculated based on an integration of the calculated factor of safety ( $F_s$ ) over depth with a weighting function. Iwasaki et al. (1982) provided a set of criteria to interpret the calculated index  $I_L$  based on a calibration with his dataset of field performance cases. However, in their method, the factor of safety ( $F_s$ ) is gotten by the SPT-based liquefaction evaluation method. Whether other liquefaction evaluation methods can be used in conjunction with the index  $I_L$  or not needs further investigation. In this paper, the Cone Penetration Test (CPT) data from Yuanlin, Taiwan, the area suffered the most severe liquefaction in the 1999 Chi-Chi, Taiwan, earthquake, are analyzed. The Robertson's CPT-based method is used for the calculation of the factor of safety for these cases derived from the Chi-Chi earthquake. The factors of safety are used to define the liquefaction potential and risk indexes. The study shows that the modified Liquefaction Potential Index ( $I_{L(m)}$ ) defined in conjunction with the Robertson (1998) method yields the reasonable result in interpreting field observations.