



LIQUEFACTION RISK ANALYSES BASED on SHEAR WAVE VELOCITY MEASUREMENTS

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Examples of liquefaction as well as the related earthquake damages have been illustrated for the March 27, 1964 Alaska earthquake of $M = 8.6$, June 16, 1964 Niigata earthquake of $M = 7.3$, January 17, 1995 Kobe earthquake of $M = 7.2$, and finally the August 17, 1999 Kocaeli earthquake of $M = 7.4$.

It is emphasized strongly that in order to avoid unexpected and widespread devastating damages due to liquefaction, extensive risk analyses should be performed based on various laboratory and site investigations.

A particular technique, using S-wave velocities, has been presented for the determination of the cyclic resistance ratio, which plays a very significant role in determining the degree of risk and the factor of safety for liquefaction.

Once, the S – wave velocities are measured in situ, by an appropriate geophysical method, either, by cross – hole survey, or by refraction technique, the shear wave velocities should be corrected and unified to account for the current overburden pressure. It is also shown that, the factor of safety for the risk of liquefaction, should be further adjusted to account for the magnitude of earthquake expected, and also for the relative density and overburden pressure of the soil layer in question.

Keywords : Liquefaction, shear waves, risk analysis, factor of safety