

University of Macau

ABSTRACT

IN-SITU SHEAR WAVE MEASUREMENT AND
GROUND RESPONSE ANALYSIS FOR DEVELOPING
SITE-DEPENDENT RESPONSE SPECTRA IN MACAU

By

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The historical records indicate that Macau and neighboring areas were subjected to several relatively large earthquakes in the last century, such as the earthquake that took place nearby Macau in 1905; the magnitude was classified to 5.5. This situation implies that the need of seismic resistant design is obvious. Therefore, the first extensive investigation in local region was carried out. The research project aimed to develop site-dependent response spectra through performing in-situ shear wave measurement, namely crosshole seismic test, downhole seismic test and crosshole-SPT test, and ground response analyses. The correlation between shear wave velocity and SPT N value was then established. The finding also reveals that the design spectrum of GB50011-2001 might not be conservative for Macau soil conditions. Based on the results of computer analyses using PROSHAKE, the site-dependent ground response spectra were developed and presented for local seismic resistant design.