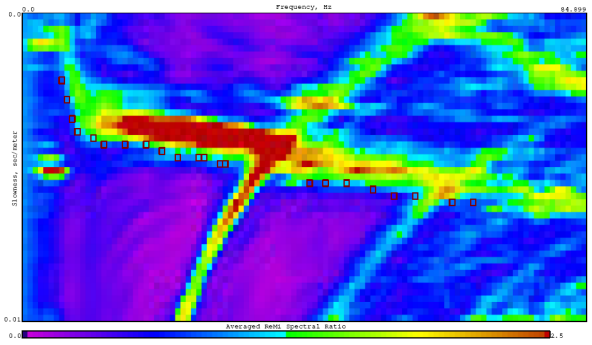
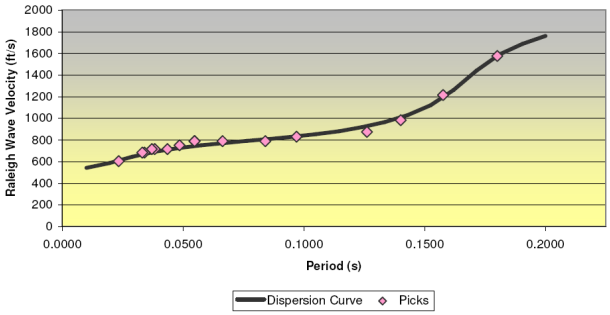
SHEAR WAVE PROFILING

SPECTRUM GEOPHYSICS "Revealing The Subsurface"

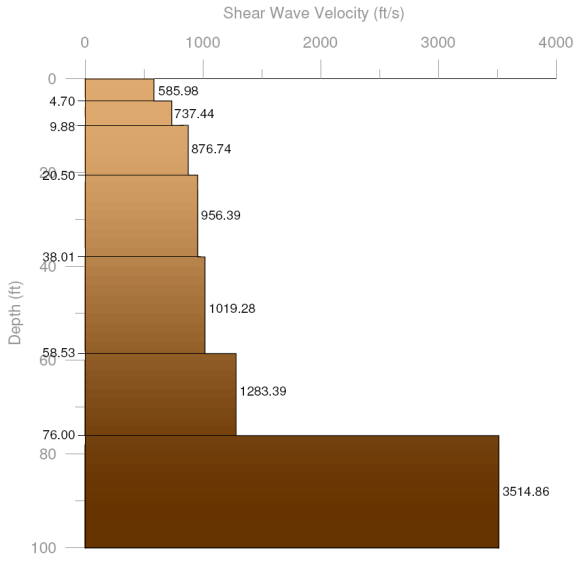
Shear-Wave Profiling for Geotechnical Design – ReMi Technique – LOS ANGELES COUNTY, CA



a) Slowness-Frequency Spectral Image



b) Dispersion Curve



c) Shear Wave Velocity Profile

The refraction microtremor (ReMi) technique, along with SASW and MASW methods, has significant advantages over traditional downhole and crosshole methods for shear wave velocity profiling. A ReMi investigation was conducted in Los Angeles County, California to provide a shear wave velocity profile for assessment of earthquake site response for geotechnical building design (in accordance with CBC 2007 and IBC 2006). Lithology at the Property consisted of fill and alluvium overlying sandstone bedrock.

Spectrum established one 345-foot linear array of 24 vertical geophones using a Seistronix RAS-24 signal enhancement seismograph, 4.5-Hz vertical geophones for low frequency readings and 10-Hz vertical geophones for high frequency readings. Once established, ambient and active-source noise records were recorded. In addition, p-wave refraction data were collected to provide a constraint to the ReMi interpretation. Noise records were processed using the SeisOpt® ReMi™ software. First, a wavefield transformation of the noise records identifies the fundamental mode dispersion curve of the Rayleigh wave (a). This curve is then picked (b) and a one-dimensional shear wave velocity model to 100 feet (c) is generated by the user that would give rise to the selected dispersion curve.

Shear wave velocities at the site were found to range between 550 feet per second and 3500 feet per second. Depth to bedrock was found to be approximately 75 feet below ground surface, as confirmed by the p-wave refraction data.

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