

Standards for Construction Vibration Control

City of Albuquerque Vibration Standards

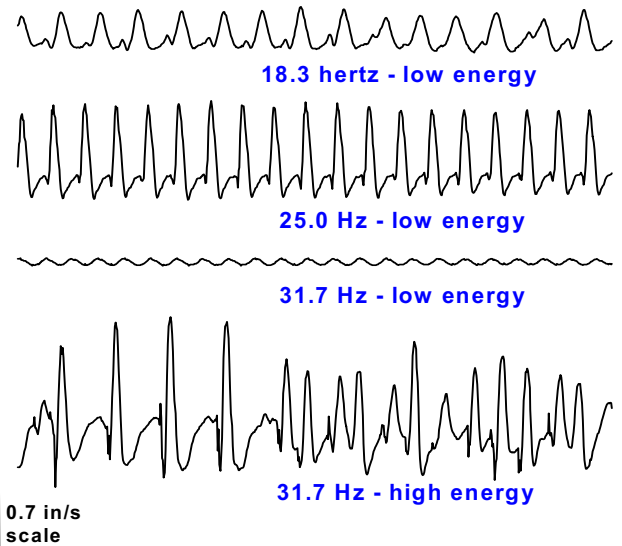
Proposed vibration standards were developed for the City of Albuquerque for application to all construction projects in the City. Specific tasks included the measurement and analysis of representative vibration sources typically generated at construction sites and recommendations for vibration standards to protect nearby structures.

Equipment monitored included trucks, vibratory compactors, tampers, and pile drivers in soils, and rammers and chemical explosive breakage of rock. Vibration field measurements were taken at six construction sites representing two rock types and four soil types. Eleven geophones were used to acquire vibration attenuation data at distance between 1 to 200 ft. away. Ground vibration characteristics were measured and evaluated for ten energy sources with energy rating between 0.13 to 22,500 x 10³ Joules.



Waveform data for roller compactors 30 ft. away are shown below. The operational range used was 18.3 Hz (1100 cpm) to 31.7 Hz (1900 cpm) with varying dynamic lifting force (energy).

Vibration construction standards were recommended to City engineers in the form of limits to ground motion velocity for various equipment-specific response frequency ranges. Frequency-based vibration guidelines and minimum distances to structures from vibratory sources were recommended for the control of all construction vibration sources when distances from sources to adjacent structures are critical.



Six-second waveforms for a roller compactor operating at different frequency and energy settings