

# APPLICATION NOTE



## CONSTRUCTION VIBRATION MONITORING

### **Construction Vibrations Can Cause Damage**

Use of explosives and other high energy excavation methods near habitations and vulnerable structures must be very carefully done to avoid damage to structures. Fortunately this problem has been faced for many years and the Office of Surface Mining Reclamation and Enforcement (OSMRE) has conducted extensive research on the subject. Public Law 95-87, Title 30 of the Code of Federal Regulations, Section 816.67 provides for monitoring of blast vibrations and establishes the necessary procedures for collecting and analyzing this data. These criteria can be applied to a variety of construction methods with impressive benefits.

### **Modern Instruments**

Modern vibration monitoring instrumentation has many advantages over older equipment including:

- Digital accuracy, usually offering at least 1 part in 2000 resolution
- On-board digital clock for accurate recording of the time of events
- Event triggered recording, with adjustable trigger thresholds
- On-board digital memory with enough capacity for as many as 70 events
- Battery powered

GEOVision can augment these systems with:

- Extra battery capacity for up to one week unattended recording for extra cost savings
- Modem connection for remote interrogation
- Secure, environmental housing

### **Typical Scope of Work**

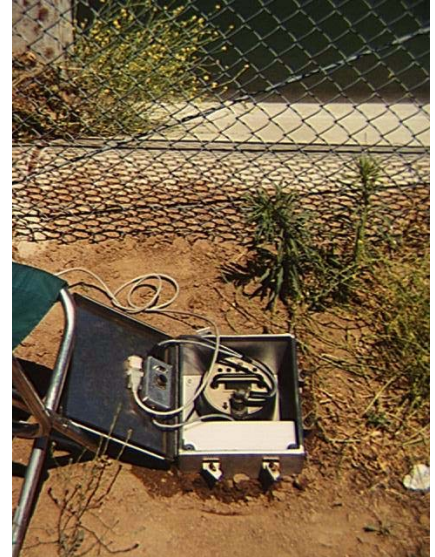
GEOVision engineers and geophysicists have more than 35 years experience in vibration monitoring. GEOVision is responsible for installing each vibration-monitoring device, collecting and processing data. Typical tasks include:

1. Install vibration monitoring system at client specified site. This includes a triaxial, digital recording seismograph with uninterruptable power supply and NEMA 12 secured, stainless steel housing. The seismograph is mounted in firm soil using 4" steel spikes.
2. Collect data with minimum frequency of once per week. For frequent events, or for construction method/procedure control, more frequent data collection is necessary. At the same time, batteries are changed and any required maintenance is performed. Once data is downloaded, memories are cleared.
3. Processing of vibration data yields a "event report" including velocity time histories, peak velocities, and response spectra for each axis for direct comparison with the OSMRE regulations defined in Public Law 95-87, Title 30 of the Code of Federal Regulations, Section 816.67(d)(4)(i) and (ii) Blasting Level Chart. This report, including one chart for each event, can be faxed to the client within a few hours of data collection.

### **Key Benefits**

The important benefits of vibration monitoring are:

- Protection from litigation. Properly documented, high quality, and unambiguous records of all vibration effects, demonstrating compliance with OSMRE requirements have proven effective in limiting or preventing costly law suits
- Improved control over construction methods. Quick and direct feedback on vibration levels permits immediate adjustment and control over construction procedures.



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