

# **Municipal Blasting: Blast Design, Vibration Monitoring & Control**

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### **Abstract**

This paper includes research and investigation into blast design and blast optimization for vibration control in municipal and tight blasting situations, where specifications were extremely stringent.

The paper is written for the field blaster to understand and develop blast plans based on field conditions.

The paper includes blast design considerations, utilizing seismograph arrays to check and predict vibration results, and problems encountered in vibration monitoring in extremely tight situations (0-20 feet).

Blast vibration frequency, acceleration, peak particle velocities, and relative displacement are discussed with effects in the near and far fields and blast designs utilized to stay under limits.

The paper also discusses using the latest in technology for blast design to control vibration. Equipment includes 2D and 3D laser profiling systems, digital video, fragmentation analysis, seismograph arrays, and borehole tracking devices.

Other topics are discussed such as public relations, working with regulatory personnel, unions, and other project consultants, and the problems associated with municipal blasting situations, such as, flyrock and proximity of other personnel and equipment on the project.