SIGNAL FILTERING FOR SAFE, EFFICIENT EXPLOSIVES USE NEAR ENGINEERED STRUCTURES

PIERRE ALLARD, chief Geophysics div., CETE d'Aix, France
WILFRID COMEAU, Methods engineer, Hydro-Quebec, Canada

ABSTRACT

Near-field and close-in blasting can be safe and efficient, near engineered structures, if the dynamic reaction of structural members to blasting vibrations are considered. Safe particle velocity criteria can be derived from allowable safe static flexural deflections and critical frequencies. Control of close-in blasting can be accomplished using low-pass filtering of the particle velocity signal at the critical frequency. The CETE Mediterranee laboratory at Aix-en-Provence, France, a branch of the Ministry of Roads and Bridges has -pioneered this approach and successfully applied it to major road cuts and tunnels in built-up areas, as well as a major powerhouse expansion project in Africa. This approach is presently being used for a spillway rehabilitation project in Quebec, Canada. This paper exposes- the theoretical aspects and gives case histories of its use. The SCS-15 an automated, peak reading, data acquisition device is described.