

Relevancy of Peak Parameter Plots in Estimating Effects of Ground Shock

J.H. Chew, and E.C. Leong*

School of Civil & Environmental Engineering, Nanyang Technological University, Singapore.

*Corresponding author: cecleong@NTU.EDU.SG

Studies on correlations of ground shock parameters from explosions began since 1870. Many field tests of various scales have been conducted to obtain the correlation of these parameters. One example is the U.S. Army Corp of Engineer's TM 5-855-1 (1986). The objective of this paper is to evaluate the relevancy of the plots in TM 5-855-1 (1986) given that many advances have been made in computational modeling. In the paper, ground shock parameters such as pressure, velocity, acceleration, impulse and scaled distance are firstly expressed as dimensionless parameters to develop dimensionless counterpart plots of the TM5-855-1 (1986) plots. Next, data from ground shock studies in the literature are examined using the dimensionless plots. It is found that the dimensionless plots provide good indicative values of the parameters and it is also possible to know how the parameters will change as degree of saturation of the soil and soil type changes.

Keywords: Ground Shock, Pressure, Velocity, Acceleration, Impulse