



DYNAMIC ISOLATION SYSTEMS

Terms & Symbols

Hysteresis Loop: This is the force displacement plot generated by the shear testing of an isolator. (see below)

Elastic Stiffness, K_e : This is the initial stiffness of the isolator, typically at less than one inch displacement. Its value is dominated by the lead core size and is important in controlling the response to services loads such as wind.

Yielded Stiffness, K_d or K_2 : This is the secondary stiffness of the isolator and is a function of the modulus, total height and area of the rubber.

K_{eff} (Effective Stiffness): This is the isolator force divided by the displacement. This is a displacement-dependent quantity.

Hysteretic Strength, Q_d : This is the force axis intercept of the isolator hysteresis loop. This parameter relates to damping and isolator response to service loads.

Yield Force, F_y : The yield force is the point in the model at which the initial stiffness changes to secondary stiffness. In reality, there is a smooth transition from one stiffness to the other, rather than a well-defined point. This value is mainly used in analytical modeling.

Energy Dissipated per Cycle, EDC: This is the area of the hysteresis loop. This value is a measure of the damping of the isolator.

Vertical Stiffness (K_y): This is the vertical stiffness of the isolator.

DBE (Design Basis Earthquake): DBE represents the ground motion that has a 10% chance of being exceeded in 50 years.

MCE (Maximum Credible Earthquake): MCE is defined as the ground motion that has a 2% probability of being exceeded in 50 years

