

- Earthquake resisting building

An earthquake is the vibration, sometimes violent to the earth's surface that follows a release of energy in the earth's crust. This energy can be generated by a sudden dislocation of segments of the crust, by a volcanic eruption or even by a manmade explosion. The dislocation of the crust causes most destructive earthquakes. The crust may first bend and then the stresses exceed the strength of rocks, they break. In the process of breaking, vibrations called seismic waves are generated. These waves travel outward from the source of the earthquake along the surface and through the earth at varying speeds depending on the material through which they move. These waves can cause disasters on the earth's surface. No structure on the planet can be constructed 100% earthquake proof; only its resistance to earthquake can be increased. Treatment is required to be given depending on the zone in which the particular site is located. Earthquake occurred in the recent past have raised various issues and have forced us to think about the disaster management. It has become essential to think right from planning stage to completion stage of a structure to avoid failure or to minimize the loss of property. Not only this, once the earthquake has occurred and disaster has taken place; how to use the debris to construct economical houses using this waste material without affecting their structural stability

How earthquake resistant construction is Different?

Since the magnitude of a future earthquake and shaking intensity expected at a particular site cannot be estimated with a reasonable accuracy, the seismic forces are difficult to quantify for the purposes of design. Further, the actual forces that can be generated in the structure during an earthquake are very large and designing the structure to respond elastically against these forces make it too expensive. therefore, in the earthquake resistant design post yield inelastic behavior is usually relied upon to dissipate the input seismic energy. Thus the design forces of earthquakes may be only a fraction of maximum (probable) forces generated if the structure is to remain elastic during the earthquake. For instance, the design seismic for buildings may at times be as low as one tenths of the maximum elastic seismic force. Thus, the earthquake resistant construction and design does not aim to achieve a structure that will not get damaged in a strong earthquake having low probability of occurrence; it aims to have a structure that will perform appropriately and without collapse in the event of such a shaking.

Ductility is the capacity of the structure to undergo deformation beyond yield without losing much of its load carrying capacity. Higher is the ductility of the structure; more is the reduction possible in its design seismic force over what one gets for linear elastic response. Ensuring ductility in a structure is a major concern in a seismic construction.