

Base Isolation

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EARTHQUAKE AND BASE ISOLATION

An earthquake by itself is not a disaster, it is a natural phenomenon that results from ground movement.

These produce surface waves, which cause a vibration of the ground and structures standing on top. Depending on the characteristics of these vibrations, the ground may develop cracks.

The possible risk of loss of life adds a very serious dimension to seismic design, putting a moral responsibility on structural engineers.

In recent times, many new systems have been developed, either to reduce the earthquake forces acting on the structure or to absorb a part of seismic energy.

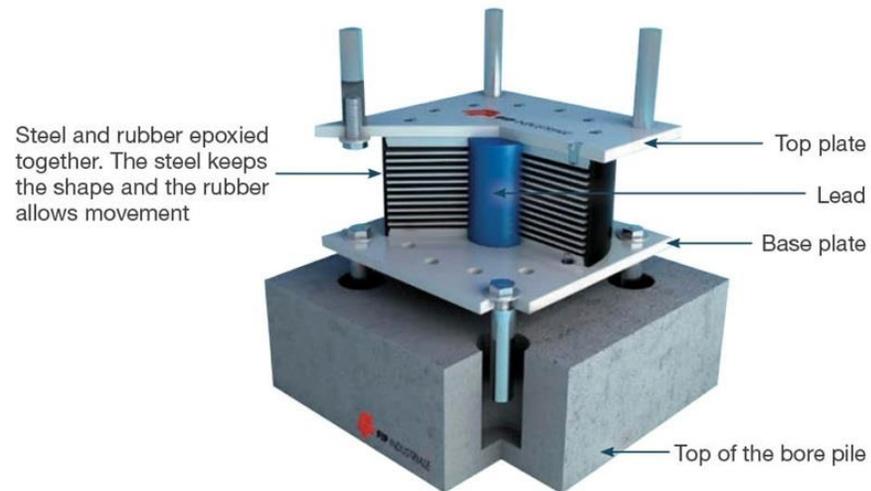
One of the most widely implemented and accepted seismic protection systems is base isolation



What is Base isolation?

Its isolation mechanism absorbs the earthquake force to convert severe vibrations into much smaller and slower ones.

BASE ISOLATOR CLOSE UP

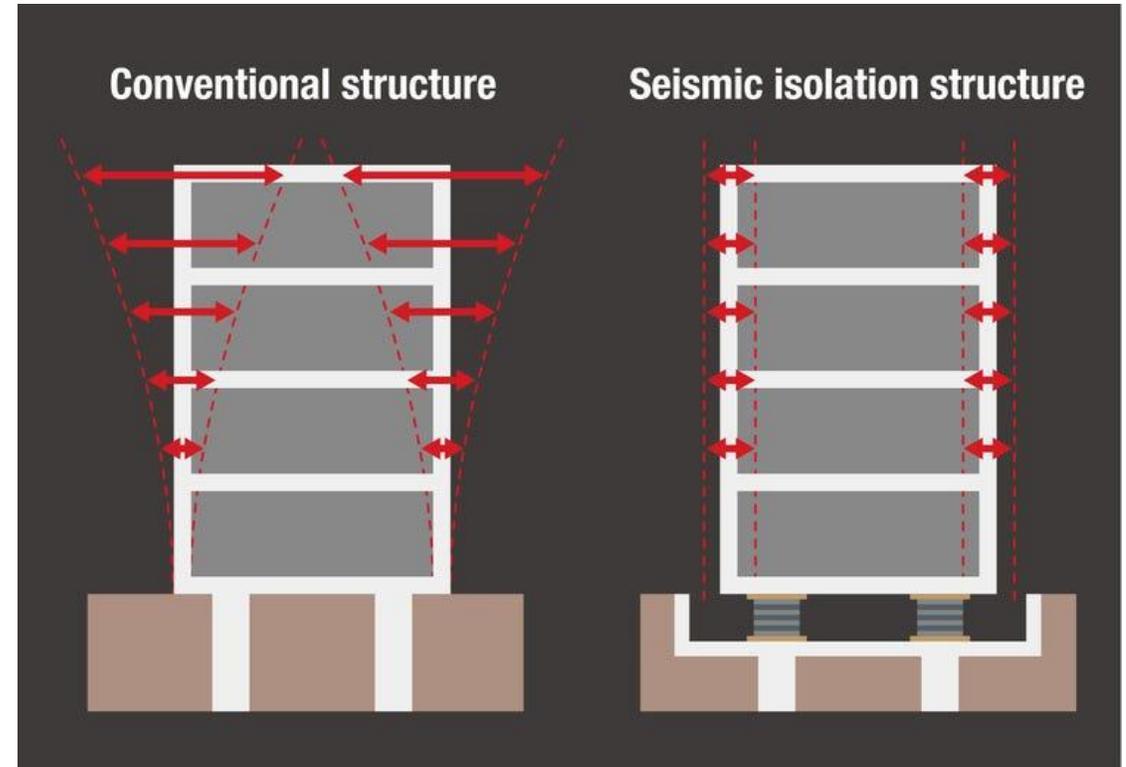


CONVENTIONAL AND ISOLATION STRUCTURE

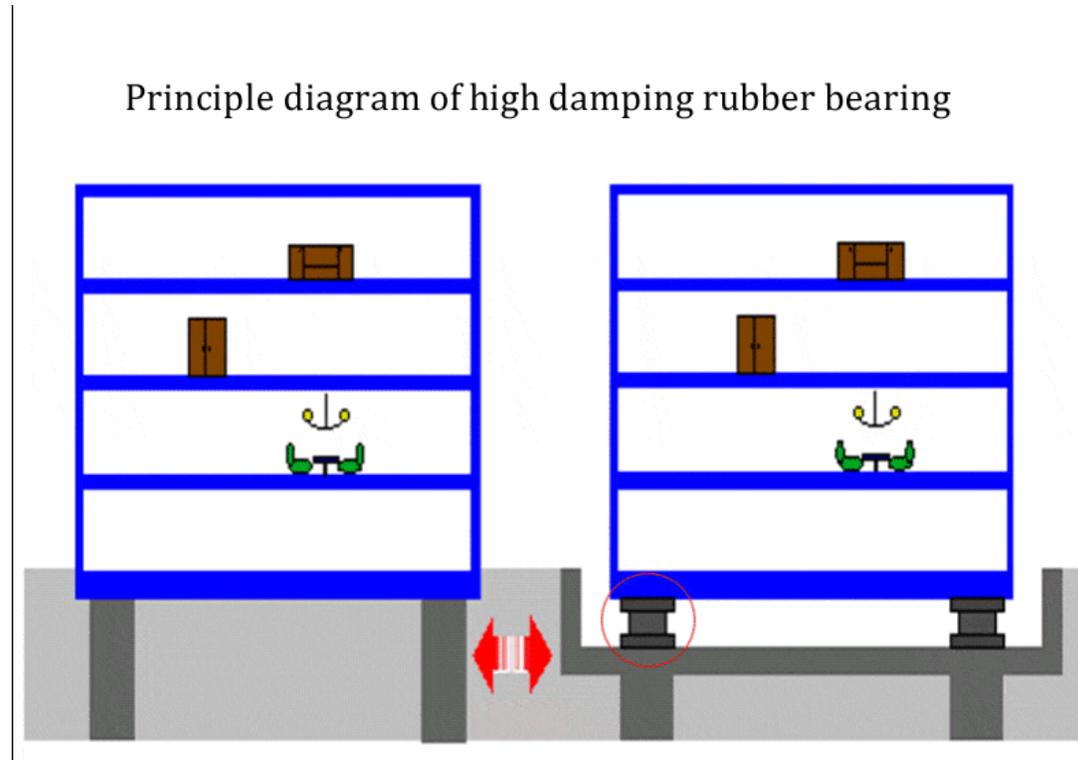
The concept of base isolation is explained through an example of a building resting on frictionless rollers.

When the ground shakes, the rollers freely roll, but the building above does not move.

Thus, no force is transferred to the building due to shaking of the ground; simply, the building does not experience an earthquake.



The concept of base isolation



Types Of Base Isolators

ISOLATORS			
Elastomeric isolators		Sliding Isolators	
Natural rubber bearing	Low damping rubber bearing	Flat sliding bearing	Spherical sliding bearing
Lead rubber bearing	High damping rubber bearing		

Types Of Base Isolator EXAMPLES

Base Isolation System Damper



Steel damper



Oil damper



Lead damper



Friction damper with
Coned disc springs

Rubber



Sliding Isolators



Spherical Sliding Bearing

