Seismic isolation structure of existing buildings

Abstract

The proposed technology can be very effective in the seismic protection of constructions, historic and monumental areas, which present specific obstacles to a direct intervention on the structures. The insulating devices are placed through a series of horizontal drillings - a technique known as jacking - and the subsequent horizontal cut of micro-tunnels, creating a discontinuity between foundations and subsoil on which the building insists.

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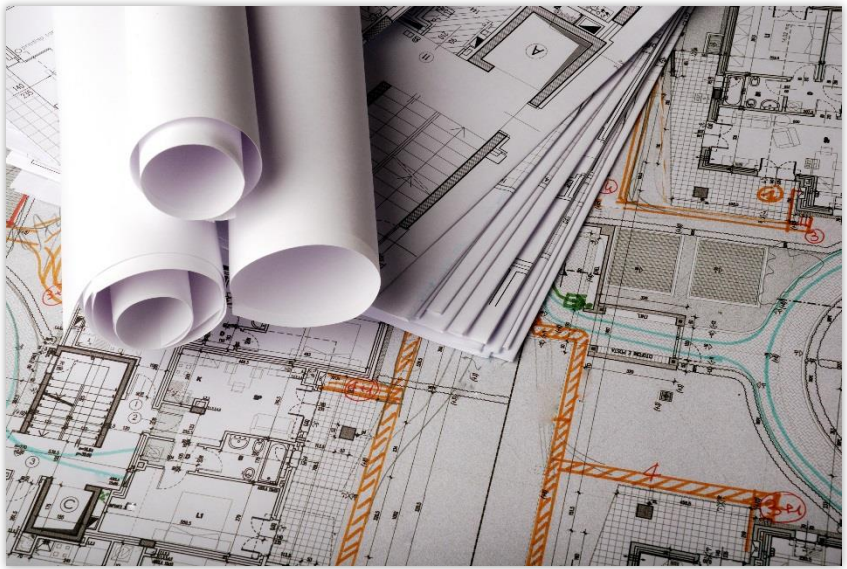

micro-tunnelling

plane of discontinuity

seismic protection

isolated underground platform

horizontal drilling

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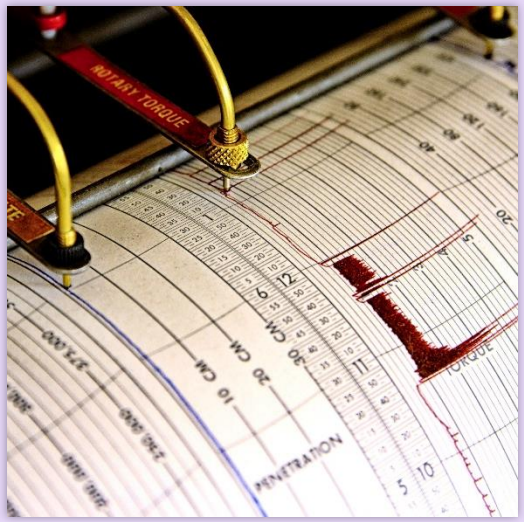
POLITECNICO DI TORINO

Seismic isolation structure of existing buildings

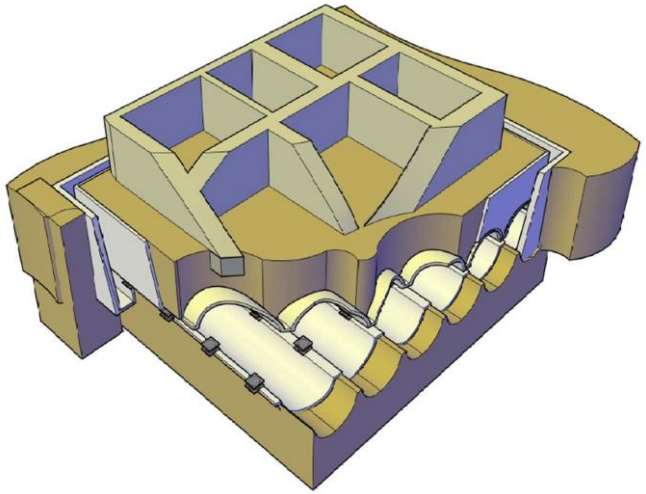
Description

The presented invention is the first to have used the technology for the insertion of horizontal tubes in the implementation of seismic isolation. Historic buildings are not directly altered in order to protect the original structure. The insulating devices are placed through a series of horizontal drillings - a technique known as jacking - and the subsequent horizontal cut of micro-tunnels, creating a discontinuity between subsoil and foundations on which the building insists.



Applications

The methods currently available on the market are not adaptable to every kind of structure, since they are designed to be used during the construction of new edifices. The proposed technology can be very effective in the seismic protection of structures, historic and monumental areas - which present specific obstacles to a direct intervention on the buildings - or even industrial facilities, for protecting components and pipes subject to differential displacements at the edges.



Advantages

Our method for the seismic isolation of buildings exploits the soil under the foundations of construction to be protected as an isolated platform. During the implementation phases, underground rooms are completely preserved and become part of the isolated structure. Hence, the presented technique can be used also on those constructions having one or more floors below the ground level, such as churches, crypts, historical buildings and monuments.

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