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The Negative Impact of Endogenous Factors on the Foundation Soil of Buildings

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Abstract

Foundation soil properties are influenced by many factors. Endogenous processes are one of these. Foundation soil and building constructions are exposed to a number of factors, which can be influenced to a greater or lesser extent. Endogenous processes are factors that cannot be avoided. Construction works interact with these processes and have to cope with its effects. If we are unable to predict their occurrence, its impact strength and possible consequences, we are not able to confront these phenomena. Tectonic movements that cause subsidence, landslides, erosion, earthquakes, waterlogging, flooding areas and many others belong to endogenous processes. An earthquake is an endogenous process as well. An earthquake causes quakes, destruction of buildings, landslides, soil liquefaction, subsidence and changes in relief. The last phenomenon covered in this publication is volcanic activity. Volcanic activity causes a change in relief, destruction of buildings, earthquakes, landslides and fires.
Endogenous processes cannot be separated from exogenous processes. Exogenous and endogenous factors are interconnected and together affect terrain morphology, rock properties, groundwater, and many others. Speech endogenous processes is often much greater, more destructive, but at a significantly smaller area.

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Keywords: endogenous factor; tectonic movements; earthquake; volcanic activity; buildings.

1. Introduction

Endogenous processes taking place in earth's body. These processes cause changes in the composition of rock material and their stress-strain changes. These processes can be influenced by men and it is therefore necessary to

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adapt to them. This represents a suitable choice of site for building structures, monitoring, prediction of changes and threats related to these phenomena and appropriate safety features in vulnerable areas. The basic scheme of endogenous phenomena and their effects are illustrated in figure 1.
This is the influence of tectonic movements, earthquakes and volcanic activity. Risks associated with the occurrence of endogenous processes are different everywhere. We can say that the greatest risk associated with the edges of the tectonic plates on which are bound effect of tectonic movements and the associated earthquakes and volcanic activity. Therefore, it is also a necessary construction element to always adapt to local conditions and any phenomena occurring at a site.

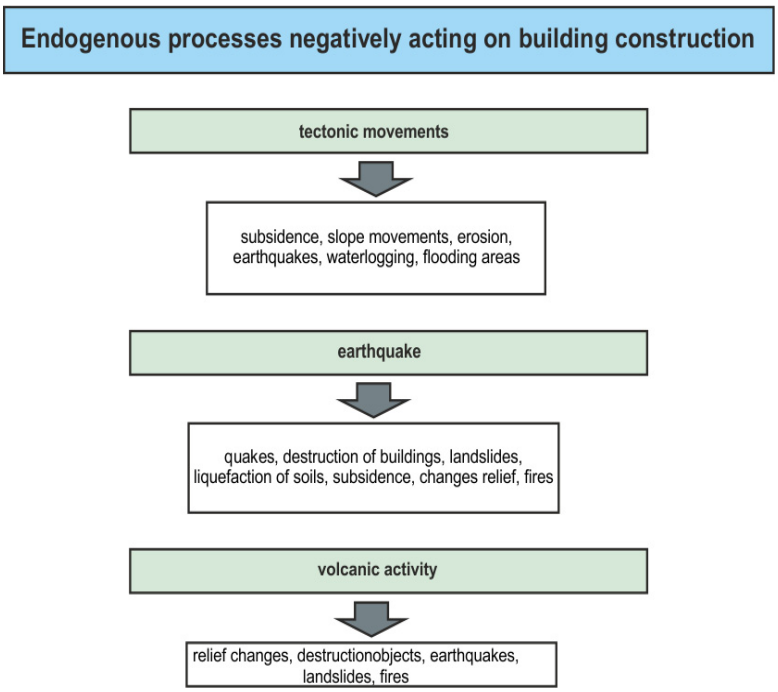

Fig. 1. Scheme – Endogenous processes acting negatively on building construction.

1. Tectonic movements with relation to urbanization

Tectonic movements rank among the endogenous processes that negatively affect the construction. Tectonic movements have a negative effect not only from the perspective of building foundations. This is the strongest geodynamic phenomenon and connected to a number of other unfavourable factors.
Tectonic movements are the result of internal forces active in earth's mantle and are explained with the theory of the so-called conventional flows. Earth's mantle is heating and is in constant movement. The speed of movement of each tectonic plate differs. The nature of destructive activity is determined by the direction of their movement. Divergence of movement speed and direction may lead to collisions.
According to the movement of tectonic plates, we distinguish divergence, convergence and translation movement. Divergent movement of plates causes the formation of new crust. The output magma is accompanied by volcanic activity and frequent earthquakes occur.
In the case of convergent movement collisions of continental and oceanic plates occur. According to the nature of the collision, their impact on the earth's surface differs. Oceanic crust is lighter and this leads to subduction under the continental crust and is accompanied by strong volcanic activity. In the case of contact between two continental plates, the formation of the large mountain ranges such as the Andes in South America is likely.