

## Analysis of Exploitation Damages of the Frame Scaffolding

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**Abstract :** The analyzes and classifications presented in the article were based on the research carried out in year 2016 and 2017 on a group of nearly one hundred scaffoldings assembled and used on construction sites in different parts of Poland. During scaffolding selection process efforts were made to maintain diversification in terms of parameters such as scaffolding size, investment size, type of investment, location and nature of conducted works. This resulted in the research being carried out on scaffoldings used for church renovation in a small town or attached to the facades of classic apartment blocks, as well as on scaffoldings used during construction of skyscrapers or facilities of the largest power plants. This variety allows to formulate general conclusions about the technical condition of used frame scaffoldings. Exploitation damages of the frame scaffolding elements were divided into three groups. The first group includes damages to the main structural components, which reduce the strength of the scaffolding elements and hence the whole structure. The qualitative analysis of these damages was made on the basis of numerical models that take into account the geometry of the damage and on the basis of computational nonlinear static analyzes. The second group focuses on exploitation damages such as the lack of a pin on the guardrail bolt which may cause an imminent threat to people using scaffolding. These are local damages that do not affect the bearing capacity and stability of the whole structure but are very important for safe use. The last group consider damages that reduce only aesthetic values and do not have direct impact on bearing capacity and safety of use. Apart from qualitative analyzes the article will present quantitative analyzes showing how frequently given type of damage occurs.

**Keywords :** scaffolding, damage, safety, numerical analysis

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