

Contributions at structures calculations and analysis in the design stage, after the earthquake and after the consolidation

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Summary

This paper represents author's intention of framing the present preoccupations regarding the development and improvement of structures design and computation methods, regarding safety measures and economic efficiency for constructions. Starting from this general assertion, the problems approached and developed by eng. Vasile Filip are part of present preoccupations of experts in design, research and construction survey field, regarding the improvement of computation methods and elaboration of solutions concerning the safety requirements and economic efficiency, during the exploitation stage and also during the rehabilitation after the earthquake damages. The requirement imposed to the constructor expert to resolve correct and rigorous, in a short time, social commands of a great responsibility, which imply the protection of some material and especially human values, justify choosing the approached theme and the utility of it's development in a doctorate thesis.

Seeing the relativity characteristic of models and computations methods from Structural Mechanics, it was thought to be useful the effectuation of some experimental researches on models. There were made two studies by the author



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regarding the analysis of a metal structure in the three approached and developed stages in the thesis and the analysis of a real mixed structure (concrete frames and masonry), that was examined and reinforced (consolidated) with author's participation.

During the first case study there were outlined the possibilities of finding and valorification of the parameters that quantifies the elements regarding the strength and deformation capacity and dynamic actions behaviour of structures in initial phase, postseismic stage and the postconsolidation stage, being also defined the correlation parameters between the three stages.

Based on these quantified assumptions there are finally established the rehabilitation measures and also their efficiency.

The second case study, made for a real structure with the effective author's participation, outlines the possibilities offered by a computer numeric analysis to determine the rehabilitation solutions and to verify them on the construction field.

The results obtained from this two case studies are able to confirm, or to modify and improve the theoretic analysis of structures in their different stages of existence.

Accordingly, the adjustment and consolidation after earthquakes must be a complete and competent activity, that must set-back the construction in adequate conditions of work in case of a new earthquake.

Keywords: masonry, analysis, consolidation, earthquake, design

