



Budapest University of Technology and Economics Architectural Faculty  
Department of Building Constructions

**Zsuzsanna Fülöp: Performance based holistic designing method of building constructions  
Ph.D dissertation**

**SUMMARY**

The architect, when performing as a building designer,

- requires knowledge and experience on the most diverse fields of the building universe (e.g. social and scientific sciences),
- has great difficulties as a single individual, managing and systematizing such a universe, results of the experts.

We have to change the traditional designing method of the building construction because of the huge number of the new materials, products, technologies based upon the latest results of the very quickly developing different sciences.

The understanding of the connections between the constructional elements and their features has more importance than in the past.

The holistic system of the building construction design is a coordinated set of stages and sub-stages of the structural decisions according to the architectural designing process. This is a more conscious, rational, and theory based approach than the previous “brain-storming” method. Choices and solutions for specific design problems, which traditionally were taken base on experience or individual thinking, can be now taken basing in technical awareness and attentive to potential alternatives.

Preventive and remedial measures and decisions should always be evaluated in the context of the whole building in order of the given designing stages.

The first stage is the decision about dimensions and architectural shape of the building mainly depend on the function and environment (natural and cultural conditions, legislation) and determined by the load bearing construction.

The second stage is the measurement of the main structural groups and surfaces of the building from the point of views of the fire resistance, lightening, energy saving, thermal conductivity, vapour conditions, acoustics, etc.

Measures should always be evaluated in the context of the whole building.

The third stage is the solution of the structural details and elements. The architect has to design the exact details based on the results of the previous stages not only by copying the figures from the catalogues.

Changing the environment or the function of a construction could change the solution of it. We have to analyse the effects given from the function and environment of the building from the first stage. For example in case of a green roof the loads are bigger than in case of a non access roof, so we can change the function of a flat roof only after controlling of its load bearing capacity.

The catalogues can not consist of the dimensions and the features of the given building so the architects can use them only after the exact evaluation of the building circumstances.

This holistic design process intends to provide technical knowledge in progression to the architects. With such support, they will be able to develop a professional work, based on the data and calculations of the specialists, international recommendations and technical guidelines.

The architect will be able to develop comparisons among solutions and develop a self-critic evaluation, regarding his ethical and technological appetencies.

In such a planning process, the architect can go back to his previous stages and improve his solutions. The designers in their practice conclude the design process, while they finally choose a specific design form, technique and materials.

The analysis of the effects and requirements of each stage can be the common ground of the dialogue between the architect and the experts; as well as this can be the method of the structural education.

Budapest, May 2007.