

Challenges towards Design Review due to Cultural and Human Factors

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1 Abstract

Design review has proven effective to avoid human errors in the design process. Since human error is the major cause for structural collapse [1], most countries have implemented procedures for design review in their building legislation. These systems represent the lived building culture in each state and thus work differently. Within the European harmonization process, challenges regarding the integration of different building cultures have been discovered. These cultural challenges affect structural safety in a wide array of topics, e.g. technical approval of building products.

In this paper, the effect of differences in the building culture and the way they affect structural safety will be investigated. Furthermore, the effect on the individual due to human factors will be examined and assessed. The goal is to provide a better understanding of the impact of cultural differences on the design review procedure and on the individual.

Keywords: cultural differences, human factors, design review, structural safety

2 Introduction

The protection of human life and its physical integrity are fundamental human rights and consequently a crucial part of a nation's legal framework. To provide the utmost safety without making structures inefficient and unaffordable, different approaches for building control have been developed and implemented by various countries [2]. In design, sufficient structural integrity is commonly thought to be achieved through application of safety factors, which are deemed to

define the necessary margin between the design values of the actions and the design value of resistances. Safety factors are determined from prediction models and stochastic assessment, i.e. the design problem is formulated stochastically (under uncertainty) to account for variations in so-called (random) basic variables such as material strengths, geometrical deviations, uncertainty in the prediction models etc. From there, the reliability of a structural component can be determined by use of advanced algorithms (see [2] and [4] for further information). Note, that reliability is purely a characteristic of a member that