

Evaluation of the Risk Management of Structural Safety in 15 Building Projects

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Summary

This paper presents results of a research towards risks in design and building processes with respect to structural safety in contemporary building projects. 15 almost or just finished building projects with different functionalities and different clients were subject of the research. Different ways of cooperation (traditional, design & construct, building team, turn key) were represented. After document reviews, interviews and site visit with visual inspection, for each project a report with the main facts of the organization of the process, the structural design, costs and fees and interventions related to structural safety was written and verified by the client's project manager. A risk table was developed in which for each stage of the project risks are distinguished that could lead to the top risk: lack of structural safety. The individual building projects were evaluated. In 12 of the 15 projects interventions related to structural safety occurred. These led to modifications or strengthening of already executed structures. Assessment of the risks and the way these risks were controlled result in an appraisal of the proof of structural safety and the level of risk control. It is concluded that parties in an individual building project do not always have the same view of structural safety, that in most projects no specific decisions are made about the level of structural safety and that the type of contract seems to have no relation with the level of risk control.

Keywords: design process, building process, structural safety, risk management, case study.

1. Introduction

A structure is supposed to be safe as the expected solicitations on the structure are less than the resistance. By assessing limit states by making analyses of the schematized structures, the goal is to reach an acceptable level of reliability. Building laws and codes define requirements of a minimum level of reliability.

Collapses of structures and other incidents show that structures not always fulfill the expectations that are based on above mentioned methods. Case studies of structural failures give insight in the causes of the failures and the risks that belong to structural design and building processes.

In the Netherlands the Ministry of Housing, Spatial Planning and the Environment is responsible for the building laws and the supervision of compliance by builders. After several failures and incidents related to structural safety they feel a need for more information about the realized structural safety. They requested a research which gives insight in the risks and the risk management related to structural safety in contemporary building projects. The research into the management of structural safety was done through an investigation of 15 building projects. The