The Future Engineer: a Structural Architect?

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Abstract

As design packages become more powerful, the need for physical computation in structural engineering is decreasing. Structural engineers may therefore need to redefine their role in the structural design process in order to remain a significant role player. This may require more prominent participation in the conceptual design, buildability, durability and/or project leadership.

To achieve the above, future engineers will have to think and work with creativity and innovation. They will need a deep understanding of the conceptual design and theory of structures, in addition to the engineering fundamentals that are currently being taught.

Structural leadership within the project team is seen to become an increasingly important role for future structural engineers. They will therefore require excellent leadership, management, communication and collaboration skills, and may need to receive additional education.

Keywords: leadership; management; communication; collaboration; buildability; structural engineer; architect; computer software.

1 Introduction

1.1 Background

As design software packages become more powerful, the need for physical computation in structural engineering is decreasing. This represents a growing concern for the profession as it brings the value of a structural engineer into question.

Structural engineers may therefore need to redefine their role in building design in order to remain a significant role player. This may require more prominent participation in the conceptual design, buildability, durability and/or project leadership.

State-of-the-art design software has become a necessity in the modern structural engineer's office. Not because of the complexities of the structure, but because the market demands the productivity that such tools allow [1].

Structural engineers need to ensure that these productivity gains become a means to free themselves from the tasks of code checking, physical computation and the risk of mathematical errors. The "free time" so gained, should be used to obtain a greater understanding of the philosophy of the structure and its overall performance.

This may also provide the structural engineer with sufficient time to take responsibility for the structural leadership of the project. They would therefore not only provide guidance to the architect, but the client as well.

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