



## Joint Structural & Architectural Approach towards Human Urbanism

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### Abstract

The necessity of joining structural and architectural approaches to reach human-oriented structures and develop contemporary urban environment is presented through several examples. Projects of an airport, a stadium and few bridges as outcomes of collaboration between structural engineers and architects will be overviewed.

**Keywords:** structural engineer; architect; joined approaches; airport; stadium; bridges.

### 1 Introduction

The development of the structural concept is the critical part of every structural project. When the structural concept is correct, the structure will be in accordance with the vision of the developing designer, possible to construct, and financially and technically viable, while when it is not correct the structure may easily become a financial and architectural disaster.

The roles for structural engineers and architects in the design of structures change over time. In the time of the construction of the great cathedrals, the Master Builder dealt with all design issues from the artistic and aesthetic to the technical. However, since the time of the Industrial Revolution and with the development in the field of sciences and new materials, distinctions between these two professions are even more evident. Since then the engineer is concerned with technical issues and the architect with architectural issues.

### 2 Joining different approaches

The quality of structural engineering work is traditionally judged on the practical foundations of efficiency and economy. Efficiency represents minimum of material consumption for assigned safety and economy introduces minimum expenses for assigned persistence, serviceability and durability. By adding an aesthetic component, the structure may become the work of structural art [1]. There are some general principles of beauty based on geometric, sculptural or structural theories. Nevertheless, these aesthetic rules should serve only as a framework [2]. The natural environment could be a promising source of inspiration, because often forms found in nature are aesthetically pleasing and shaped for maximum efficiency, transferring the required amount of force with the least amount of material.

Certain structures such as airports, sport arenas, bridges that are serving to community are often