

Design of structural systems for artworks fabrication and installation in urban areas

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1 Abstract

In urban areas, besides structures such as bridges and buildings, big sculptures are each day more common as major pieces of public art. Although these artworks are not meant to satisfy needs as housing or transport, they play an important role in the city: they are major pieces of art made accessible to everyone that enhance the environment and contribute to the urban planning.

Major sculptures must withstand the same load types as the rest of the city's infrastructure, for example strong winds and earthquakes. The analysis of these structures is an unorthodox field for civil engineers where new challenges appear: complex shapes, innovative materials, new fabrication techniques... Moreover, public art is a field that continually evolves. Art and engineering become two aspects of the same creative process and the interaction between professionals is fundamental.

In this work, several success cases in design, fabrication and installation of artworks by some international artists in inhabited areas all over the world are presented. We reflect on the limits in analysis and design focusing on the limitations imposed by the engineering codes. The search for compromise solutions that produce safe structures that still send the artist's message is also discussed.

Keywords: Artworks; Sculpture; Public Art; Bronze; Steel; Stone; Glass Fiber Reinforced Polymer.

2 Introduction

Public art refers to works that are accessible to all, usually because they are in the public domain or can be noticed from it. Public art is expanding in scope and major sculptures are becoming more common in urban areas.

These sculptures do not satisfy any basic need such as housing nor enhance other important urban activities as transportation. However, they play other part in cities and contribute to improve the urban sustainability and the quality of life. Public artworks have been shown to positively affect

several urban issues: planning, social cohesion, urban identity, sense of place, tourism [1] [2] [3].

Major sculptures withstand the same loadings as the rest of the city's infrastructure, for example strong winds and earthquakes. Nevertheless, the analysis of these structures presents several features that make this field unorthodox for structural engineers.

To send their message, artists use the shape, the size, the material or the way in which the piece is supported. Several parameters that we are used to control are now someone else's domain. That is why collaboration between professionals is critical.

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