



Construction set: structural concept for Joaquín Sorolla Railway Station in Valencia

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Summary

The structure of Joaquín Sorolla railway station in Valencia is based on a modular construction concept. Like a *Meccano* or a “construction set”, it is composed of identical elements prepared to be boltconnected together.

In structural terms, the “mushroom” or “umbrella” type is considered. Simply formed by a central column with a cantilever roof, it is a classical typology in structural engineering. The main innovation features of the project are the successive sequence of the different modules – with and without column – and the height transition from the platforms to the hall, considering a similar “umbrella” type structure but inclined. This structural concept is supported by its refined details: first, the bolted connections between modules, and secondly the identifying shape of the central connection between the diagonal beams of the modules, which identify the butt joint itself.

Viewed from below, the modules offer a strong structural composition, that of an expressive, modular coffered ceiling, intended to become the representative image of the station. Inspired in Joaquín Sorolla’s paintings, for which light and brush-strokes draw Mediterranean beach scenes, the white steel structure of the station, with its refined elements and details, defines a welcoming iconic symbol for Valencia.

Keywords: railway station, structural design, architectural design, structural concept, detail design..

1. Introduction

Valencia needed a station. The complexity and the cost of this ambitious railway underground project in the city (Southern junction, access channel, north station and tunnels), suggested in 2008 the idea of building a temporary station above ground, to provide service until the completion of the future underground project. In this context, of certain provisionality and requirement of rapid construction, Valencia’s Joaquín Sorolla’s railway station was born. The structure was designed considering quick assembly of the steel structure, and possible future disassembly, as well as its occasional reuse as a pergola for the forthcoming Valencia Central Park.

Nevertheless, it is important to bear in mind that a railway station is no longer nowadays a building on its own but a part of a larger complex [1]. Although provisional, a station is an integrated part of the city, with different urban functions and a new iconic reference. A new center of activities where all transport modalities are concentrated either in or near the station.

The station opened in 2011 and was well received by the city and highly referenced in prestigious structural engineering journals [2,3]: Nevertheless, this paper gives a different view to what has been published to date, highlighting in particular its structural design as a constructive game and its formal result as a visual reference [4].