

Innovative Concept for the Steel Bridge over the Ter River in Girona, Spain

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Summary

A new innovative bridge concept has been developed for a steel-concrete bridge crossing the Ter River in Girona (North-East of Spain). The bridge is a continuous girder with expressive forms and slender elements. The bridge exhibits a complex simplicity: new forms, pure lines that can be easily followed by viewers, well balanced composition based on symmetrical shapes, and a complex structure. The bridge interacts smoothly with both the urban environment of the suburbs of Girona and the environmentally protected River valley. The bridge is perceived as a transparent and powerful structure with a clear identity but not visually dominating in the location.

Keywords: Composite bridge, urban, architecture, advanced analysis, constructive process, aesthetics, steel, concrete.

1. Introduction

The importance in creating a new city entrance and the prominence of the bridge site demanded a structure that was sensitive to the urban landscape. The major awareness in the design process was the balance of cost, aesthetics, constructability, and structural efficiency.

The bridge is a nine span continuous deck with an overall length of 485m. The main span is 120m long and its deck is hanging in the central part by a curved steel member tied between two pylons that split into two branches on each side, spanning open to create two doorways.

The bridge has been designed to have a clear identity without disturbing the natural environment.

2. The Context

Girona is a city with more than ten centuries of history. Located 100 km North of Barcelona, it occupies a strategic position for road communications in Catalonia and it has a huge cultural legacy. Amongst its several landmarks, there are the Carolingian's wall ruins, the largest in Europe, one of the most ancient and biggest Jewish quarters, the widest Gothic cathedral and various Romanic and Gothic buildings that define the city's history. For all the above, Girona receives thousands of visitors every year.

The 20th century economic boost and population growth have led to the creation of new residential and industrial areas around the historic core, and consequently the need of new public infrastructures.

The location of the bridge was the result of an intense and profound effort to cover all the different concepts.

The future road will allow the communications between two main roads, Girona Ring Road and the N-II road, a main national road. The bridge will cross the Ter's river bank, passing in front of a main Hospital and connecting two highly populated neighborhoods, Sant Ponç and Pedret.