

THE PEDRO AND INES FOOTBRIDGE AT COIMBRA - conception, design and construction -

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Summary

Urban and architectural planning, structural conception, design and dynamic behaviour of the Cycling and Pedestrian Bridge over the River Mondego, in the city of Coimbra, connecting the two sides of the park built along the two river margins, are described.

Keywords: footbridge; steel bridge; urban planning; structural concept; structural design; construction method; vibration control; tuned mass damper; handrail; coloured glass.

1. Urban and architectural planning

The Mondego River runs through the middle of the city of Coimbra before coursing unerringly westwards into the Atlantic Ocean. Immediately downstream from the city, there is a low dam creating a water basin which not only supplies irrigation water for fertile cultivated land on the margins of the river all the way down to its mouth, but also provides Coimbra with a refreshing lake of over 200 m in width, where water sports facilities are available. Coimbra is also a student city by excellence, and the margins of the river have always been a favourite haunt for students, where they can rest and daydream.

River margins at Coimbra become very low and are often flooded during the winter season when rainfall is higher than normal. Therefore, building construction in Coimbra has always taken place some distance away from the river, and land right alongside the river has been preserved in its natural setting. Recently, that land was allocated to parkland with several social, leisure and cultural equipments, and crossing from one margin to the other is now a very pleasant promenade along the footbridge named after Prince Pedro and Lady-in-Waiting Ines, who were actors of a tragic medieval tale of love, passion and murder.

Figure 1 reveals the very special solution designed for this bridge [1]. Both deck and arch split in two halves and shift transversally into parallel alignments with the two decks united along 12 m in the centre of the bridge, defining a central “piazza” where pedestrians tend to stop and relax while looking at the beautiful scenery going up the hills, with the Old University of Coimbra on the North side and the Carmelite Monastery on the South side.



Fig. 1 Bird's eye view of the bridge with elevation and plan reflected in the calm river waters