

BACK TO SIMPLICITY ON FOOTBRIDGE DESIGN: FOOTBRIDGE OVER RIVER AVE, IN VILA DO CONDE, PORTUGAL

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Summary

At a time when the formal excesses and the ornamental delusions seem to be the rule in footbridge design, this paper describes the experience of “going back to simplicity” in the global conception and design of footbridges where aesthetics, environmental integration, structural efficiency and economy are naturally interrelated.

Generally, the structural solution results from the confluence of a variety of factors: the distance to be overcome and the intermediate supports to be considered, the function to be performed by the bridge, the structural materials to be employed, the free widths and heights to be considered and the construction methodology to adopt.

In bridges, the structural solution is the paramount factor of its global conception, very much dictated by the location (physical and social context). Obviously, the search for efficiency results many times from the symbiosis between architectural (form) and structural ideas.

For the “Vila do Conde” footbridge, both the landscape and the historical and cultural surroundings invited the conception to be as pure and clean as possible, with no structural elements above the bridge deck.

Two explicit requirements were the maximum height of the pedestrian path over water to be 6 m and a minimum number of supports (ideally none) to consider in the riverbed. Clearly, the visual proximity of the bridge deck from the riverbanks requested a compromise between a great slenderness of the deck and that number of supports. Since the river is around 130 m wide at the bridge location, the conciliation of those requirements came with one single foundation pier in the riverbed under a “V-shaped” frame in fact providing two supports to the deck. For the benefit of local navigation, the pier is located nearer the left (south) bank, resulting in bridge spans of approximately 70 m (from the right bank), 20 m (defined by the “V” frame) and 40 m (to reach the left bank). To face the bigger span, the deck steel box section has variable height in this span and clamps to the northern abutment.

Nothing else is needed or welcome. Simplicity, effectiveness, intentionality and usefulness are the way to beauty.

Evidently, some decoration or art features may be expressed in balustrades and abutments, but never if perverting the structural purity. Under pressure from the local municipality in favour of local allusions, and following suggestions from Architect Jaime Eusébio, balustrades are to be lightly buffed stainless steel rectangular frames with a wide handrail. In satin anodized aluminium tubular profiles, which shelter, hiding them, all the lighting infrastructures. Those frames will encase laminated safety glass panels where the outer face will be screen-printed, on its protected face, with a “Bilros Lace” graphic design. Furthermore, Vila do Conde developed around a fishing community. Therefore, Architect Jaime Eusébio’s suggestion of covering the generous clamping abutment with stainless plates seeking to “reproduce” fish scales was well accepted.



Fig. 1. Visual simulations of “Vila do Conde” footbridge (by Architect Jaime Eusébio)

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