New Old-Fashioned-Style Lattice Footbridge and Retrofitting of a Masonry Arch Bridge in the Ticino Natural Park

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Summary

The project for adapting SP527 carriageway (Novara Province, Piemonte Region, Italy) has as its aim improving local roads network connection with Milan Malpensa airport. The Ticino Natural Park is fully interested by this project: environmental aspects become the most important. In the current SP527, two 19th-century infrastructures stand out: a steel lattice bridge over the Ticino river and a masonry 3-arch bridge over the Bragadano canal.

A new footbridge is needed, at the side of the existing arch bridge; it has a "celosía"-lattice theme, reminding the historical bridge aspect. Structural design is made together with the dynamic verification and pedestrians comfort. The masonry arch bridge must be retrofitted without modifying its formal appearance. The existing structure will be used for a direct vertical loads transfer onto the piers. The project is going through its detailed design phase.

Keywords: "celosía"-lattice footbridge; masonry arch bridge; vibration analysis; pedestrians comfort; buckling analysis; retrofitting; environment constraints.

1. Introduction

The project for adapting SP527 carriageway (Novara Province, Piemonte Region, Italy) has as its aim improving local roads network connection with Milan Malpensa airport. The Ticino Natural Park is fully interested by this project: environment represents a strong aspect for any made choice.

Fig. 1: Ticino river historical lattice bridge photo

Fig. 2: Ticino river new bridge rendering

In the current SP527, two 19th-century infrastructures stand out: a steel lattice bridge over the Ticino river and a masonry 3-arch bridge over the Bragadano canal. A new bridge over the Ticino river is going to be located in a roadway inside the municipalities of Lonate Pozzolo and Oleggio. From the feasibility study, the main aim is designing an original bridge, which need to be inserted in such particular environment that is the Ticino Natural Park. The architectural concept design considers the presence of the near existing historical bridge, still in use. The bridge has a total length of 316,30 m, spanning 20,00 - 30,00 - 19,50 - 144,70 - 22,15 -

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