

## “UNSTABLE BRANCH” FOOTBRIDGE IN BORGO RIVOLA (RA), ITALY

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### Abstract

A new pedestrian walkway has to be built across the Senio River, in Borgo Rivola (RA), after the damages caused by an overflow to the existing one.

The project involves the construction of a new steel cable-stayed footbridge (in order to make intermediate pylons unnecessary). The walkway is precambered not only for structural purposes, but also to allow future overflows of the river causing no more structural damage. The name “unstable branch” was chosen because the shape of the steel pylon’s body, which supports the footbridge, is inspired to a tree branch whipped by the wind. It is inclined, but its stability is provided by the cables fixed to the ground on one side and connected to the footbridge on the other.

In the following pages, its static and dynamic behavior will be analysed, together with the description of the structure and how it will be constructed. Furthermore, a simple intervention to prevent the new footbridge to resonate with a crowd on will be proposed.

**Keywords:** structural concept; cable-stayed footbridge; steel footbridge; dynamic response; static response; tuned mass damper.