



Pre-Designed Bridges

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Summary

6 prototypes of variable depth pre-designed bridges are shown, where the variation of the depth follows the diagram of the efforts. The spans vary between 12 and 75 meters. The models are adapted to the different boundary conditions (vertical wall, inclined or broken talus, asymmetry...).

The Monocontentio and Bicontentio models are an uncompensated two-or-three-span continuous beam. The two lateral box girder elevation follows the diagram of the bending moments. The monocontentio sinus and bicontentio sinus are a variation of the monocontentio and bicontentio models, adapted to a slightly different boundary condition.

The Von Mises Bridge is formed by two lateral simply supported box beams, which variation of the depth is based on the criterion of comparison of Von Mises. In order to provide permeability within the footbridge, some alveoli are practiced in the side-beams.

Keywords: beam, restraining, double-bolt articulated joint, variable depth, parameterization.

1. Introduction

A project of a bridge is usually approached in two different ways: one-off bridge designs (the bridge is adapted to a specific site), and repeatable bridges (simple geometry customizable to very usual boundary conditions).



Fig. 1: Contentio prototypes

Current technology allows adopting a third way for drawing up a project: the parameterization of architectural bridge designs. We have developed pre-designed projects which are based on 6 models previously done: Bicontentio, Bicontentio Sinus, Monocontentio, Monocontentio Sinus, Von Mises and honeycomb Von Mises.

The new bridges engineering presents features of the traditional engineering, industrial design, and the architecture, as long as it moves away from all of them.