

## Asymmetric suspension footbridge in the town Písek

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### Abstract

The foot bridge, situated in the historical town Písek in southern Bohemia, consists of two spans with different structural solutions: asymmetric suspension structure and cable stayed structure. Both parts meet up on the pillar situated in the river. With regard to an architect's shape, layout and spatial intents, the solution which has been adopted minimizes dimensions and height of pylons so as they do not contradict an architectonic or natural landmarks of the town.



Fig.1 General outline of the asymmetric suspension span of the footbridge

Suspension bridge of length 81,7 m and width 3,3 m consists of steel lattice truss made from tubes and orthotropic steel deck. The lattice truss is suspended on two ropes of diameter 76 mm and solid bar hangers with the thread M20 and the spacing of 6 m. The shape of truss is determined by the overall disposition of the footbridge and static requirements. Increasing stiffness of the truss along the length provides approx. parabolic shape of the truss deflection due to the uniformly distributed load and favourable dynamic characteristics of the structure. The thin pylons are 16 m high and inclined  $19^\circ$  to the side and  $6^\circ$  backwards (away from the river). Position of the top of pylons is defined by a top horizontal rod from tube and two backward tendons from solid bars M85 anchored to the upper chord tubes of the truss to avoid horizontal forces to basement.



Fig.2 Structural solutions of anchoring of ropes, tendons and hangers

The vibration absorbers were designed in order to eliminate vibrations of the natural frequency 2,46Hz. Dynamic response of the bridge before and after installation of the absorbers is presented.