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STANDARDIZATION OF THREE EFFICIENT FOOTBRIDGES: VON MISES, MONOCONTENTIO AND BICCONTENTIO PROTOTYPES.

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The Von Mises, Monocontentio and Bicontentio footbridges are three parameterized metal bridge whose main structural characteristics are their variable depth depending on the applied stress and the embedding of abutments. Its use is considered suitable for symmetrical or asymmetrical topographies with slopes or vertical walls on one or both edges. The footbridges include spans spaced apart by 20 to 66 meters, and are between 2 to 4.5 meters wide.

Its design is based on five basic concepts: integration in the geometry of the environment; continuous search for simplicity; design based on a geometry that emanates from structural behavior; unitary and round forms; and long- lasting details.

The structural behavior of these prototypes has been compared with three types of constant-depth metal beams: the bridge simply supported, and the bridge embedded on one or both sides.

The embedding of abutments, and the adoption of a variation of depth adapted to the bending moments diagrams, allow for more efficient and elegant forms which are well-adapted to the boundary conditions.



Fig. 1. Prototypes: Von Mises, Monocontentio, Monocontentio Sinus, Bicontentio, and Bicontentio Sinus.