DIATOMEA FOOTBRIDGE - INTEGRATING MODERN INFRASTRUCTURE INTO A NATIONAL PARK IN CHILE

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Southern Chile, the Patagonia, is famous for its untouched nature featuring snow-capped volcanoes, ancient forests and rivers with crystalline water. One of the most visited spots is the spectacular Petrohue Waterfalls, at the foot of the Osorno Volcano. Formerly the locals accessed the falls by jumping from one rock in the riverbed to another. When the area was declared National Park in 1926 several primitive footbridges were installed between the rocks. Today, over 300.000 people, from all over the world, visit the Petrohue Falls, most of them without outdoor gear.

Fig. 1. The finished Diatomea Footbridge.
In order to comply with the today’s safety standards, 5 of the footbridges had to be replaced. The National Park Administration wanted the footbridges to be mere auxiliary equipment in order to access the falls, without being an attraction themselves. However, there is one special footbridge, which goes directly over one of the falls and which cannot be hidden nor deleted from the landscape. It was decided to give this one bridge an attractive visual appearance. Out of 6 alternatives, a steel bridge was chosen that converts the natural shape of diatom algae into a Vierendeel beam. When the shop drawings were finished, the Ministry of Economy and Tourism absolutely disagreed with the design at all, alleging that in National Parks there cannot be anything except nature, or an infrastructure as close to nature as possible. Surprisingly, this Ministry employs architects who tried to convince us to start over again. When they got aware that this requires double work, for what there were no funds, they said: “Well, in this case, at least please install the bridge upside down, so it cannot be seen as much.” – which obviously, we did not do.

The Diatomea Footbridge is 16 m long and 3.4 m wide. It has a 15 cm thick concrete slab, composite to transverse IPE160 profiles. The main beams are hollow steel sections with a maximum depth of 1.8 m and a width of 0.2 m. It uses 4.5 t of structural steel, which are 82 kg/m².

Fig. 2. a) Diatom Alga, b) Visualization of the Diatomea Footbridge.

Fig. 3. Longitudinal and transverse section of the Diatomea Footbridge.