



Experimental testing of impact force on rigid and flexible barriers - A comparison

Georg Nagl, Johannes Hübl, and Michael Chiari

Institute of Mountain Risk Engineering, University of Natural Resources and Life Sciences Vienna, Structural Engineering and Natural Hazards, Wien, Austria (johannes.huebl@boku.ac.at)

The Trattenbach endangers the main western railway track of Austria by floods and debris flows. Three check dams for debris retention were built in the proximal fan area several decades ago. With regard to an improvement of the protective function, these structures have to be renewed. The recent concept of the uppermost barrier is a type of an energy dissipation net structure, stopping debris flows with the ability of self-cleaning by subsequent floods or by machinery employment. The access to the basin is achieved through the slit when the net has been removed. This technical structure consists of a rigid open crown dam with a 4m wide slit. This slit is closed with a flexible net. To verify this protective system, 21 small scale experiments were conducted to test and optimize this new type of Slit Net Dam. To determine the forces on the barrier, in a first setup of experiments the impact forces on a rigid wall with 24 load cells were measured. In the second setup the slit barrier with the net was investigated. On four main cables the anchor forces were measured. In a further setup the basal distance between the channel and lowest net was varied. To study the emptying of the basin and the dosing effect on debris flows.