

## ENGINEERING DESIGN CONSIDERATIONS FOR SMALL DEBRIS-FLOW MITIGATION STRUCTURES

**Sangjun Im**

*Seoul National University<sup>1</sup>*

[junie@snu.ac.kr](mailto:junie@snu.ac.kr)

**Song Eu**

*Faculty of Agriculture, Niigata University<sup>2</sup>*

[dkarj@snu.ac.kr](mailto:dkarj@snu.ac.kr)

### **Abstract**

Debris flow is the most dangerous disaster in mountain torrents over the world. Extreme rainfall event is a common cause of landslide and associated debris flow in Korea. Korean government has implemented various mitigation measures to lessen damage and losses caused by natural hazards. More than 12,000 erosion control dams have been installed on mountain torrents since the year 1986. The engineering design is a methodical series of process to achieve the designated function of structures. The simple stability analysis has been conducted to determine the dimension of erosion control dams. Recently, scientific approaches have been introduced in the design of erosion control dams to examine structural safety and reliability, and to decide the optimal layout of dam sites. Impact force of debris flow was experimentally estimated from the information on streambed materials and torrent characteristics. Numerical analysis was performed to know the effects of impact force on dam stability and functionality. In addition, the ability of designed dams to retain sediment mixture was analyzed with the help of one-dimensional debris flow simulator.

**Keywords:** Debris flow, Erosion control dam, Numerical analysis, Impact force

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<sup>1</sup> South Korea

<sup>2</sup> Japan