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## **CO<sub>2</sub> AND ENERGY FOOTPRINT OF DIFFERENT RETAINING WALLS SOLUTIONS. MASONRY RETAINING WALL vs. CANTILEVER RETAINING WALL**

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### **Abstract**

The paper presents the most economical and less polluting retaining wall system, calculated for the same site, having few different common heights used in design. The paper will highlight the importance of an environmentally friendly solution, but also the most economical solution, which should be the main criteria in the design. Two of the tools used in environmental life cycle assessments (LCA) are the carbon footprint and the energy footprint. The quantification of the carbon and the energy footprint associated to the two types of retaining walls for three different heights is presented. The assessment procedure is performed for the construction stage. The retaining walls are designed, using European norms embedded in Geo 5 software, in similar ground conditions, similar loads and weather conditions. Considering the computed cross sections, the materials quantities and on site assembly are calculated and also the CO<sub>2</sub> footprint, the energy footprint and cost. Few different constructive solutions were compared, and the outcome of the paper is the most economic retaining wall in terms of emissions of carbon dioxide, energy consumption, and not the least, the cost.

*Key words:* cantilever, CO<sub>2</sub> footprint, energy footprint, masonry, retaining wall

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