

RECYCLING OF CONSTRUCTION AND DEMOLITION WASTE IN GEOTECHNICAL WORKS

Fortunato, E., Civil Engineer Ph. D. – National Laboratory of Civil Engineering - Portugal – efortunato@lnec.pt

Lopes, M.L., Civil Engineer Ph. D. – Porto University - Faculty of Engineering - Portugal – lcosta@fe.up.pt

Curto, P., Civil Engineer - Demotri/Ambigroup – Portugal - pedro.curto@ambigroup.com

Fonseca, A., Civil Engineer - Teixeira Duarte, Portugal - ajf@tduarte.pt

ABSTRACT

About 50% of the materials extracted from the earth's crust are used in construction. Given the huge consumption that has been made of minerals and ores in Europe, which amounts to about 15 tons per year for each inhabitant of the European Union, of which about 2/3 are industrial and ornamental rocks, it is necessary to promote urgently significant changes to consumption patterns.

The recycling of construction materials is an ancient practice, used by the Egyptians, Greeks and Romans. In the modern era, began to find expression in Europe after the 2nd World War, when crushed rock started to be used in the reconstruction of buildings.

The Construction and Demolition Waste (CDW) are wastes derived from construction, reconstruction, extension, alteration, maintenance and demolition and collapse of buildings. They include soil, rocks, vegetation, earthworks and foundations and also materials used in roads maintenance.

This paper presents an overview, at the international level, of the type, amount produced and amount recycled of CDW.

The importance of the knowledge related with the in situ performance of recycled materials is highlighted, together with the contribution of studies and technical specifications for the acceptance of these materials.

A brief presentation of the production and recycle process of construction and demolition waste is made and their application in geotechnical works is addressed.

Finally, barriers regarding the application of these materials are identified and some procedures in order to encourage the use of recycled materials are pointed out, such as: implementation of a waste management plan for the planning, design, construction and maintenance of works; strong incentive for selective demolition and separation in situ, in order to obtain good quality waste for recycling, encourage recycling in situ; promote conditions for the installation of recycling areas; promote the use of CDW in public and private works; promote the creation of recycling facilities in appropriate areas with strategic location; promote cooperation between enterprises of the construction sector, stakeholders and RTD institutions, to implement research and, consequently, expand the scope of CDW application.

Keywords: construction and demolition waste, recycling, geotechnical works, Portuguese case studies.