

# Eco-pavement base with binary recycled materials of masonry and concrete

## Subject

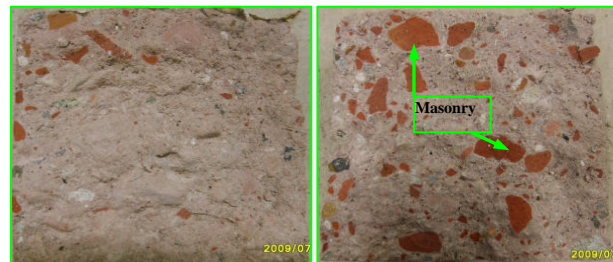
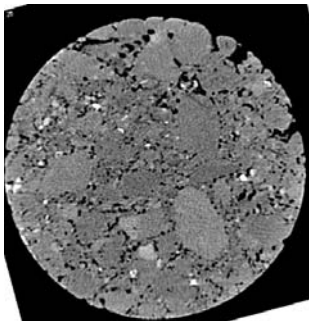
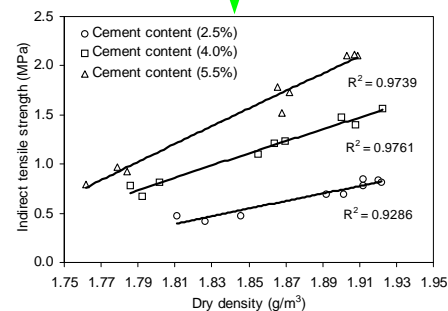
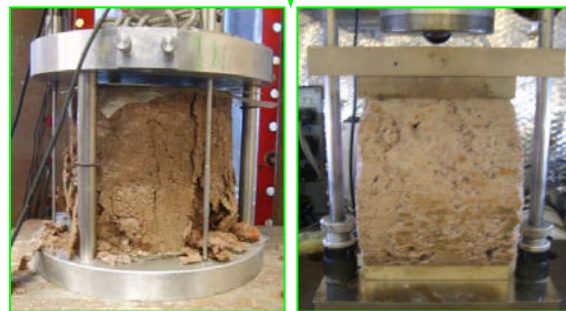
The possibility of recycling and reusing construction and demolition building waste is of increasing importance. This study will investigate the reuse of the low-quality mix granulate with binary recycled materials of masonry and crushed concrete as a cemented road base.

## Goals

The aim of this study is to develop a theoretical prediction model that estimates the properties of cement treated construction waste, which is a binary mixture with low-quality masonry and concrete.

## Expected Results

The prediction model of cement treated construction waste may be put forward experimentally and its failure behaviour can be numerically simulated.



# Structural performance of cement treated construction waste

## Binary recycled mixture

D. Xuan<sup>1</sup> A.A.A. Molenaar<sup>2</sup> L.J.M. Houben<sup>2</sup> Erik Schlangen<sup>2</sup>

<sup>1</sup>Ph.D student, d. xuan@tudelft.nl

<sup>2</sup>Supervisors

*Delft University of Technology, Faculty of Civil Engineering and Geosciences, Road and Railway Engineering and Department of Design and Construction, Delft, The Netherlands,*



## Subject

Annually billions of tons of Construction and Demolition building waste (C&D) are produced in the world. In practice, the application of C&D as road bases is an important way to reuse much more waste. The mix granulate with recycled masonry and concrete from demolished buildings has been successfully applied as unbound road base or separately reused to produce new building materials in the world. Alternatively, this study intends to use the mix granulate with low-quality masonry and crushed concrete as a cemented road material.

## Goals

The aim of this study is to develop a theoretical prediction model that estimates the properties of cement treated construction waste, which is a binary mixture with low-quality masonry and crushed concrete.

## Research Question

How and to what extent do the material variables, such as cement content, degree of compaction, curing time and ratio of masonry to concrete so on, influence the structural performance of cement treated construction waste?

## Strategy

To efficiently analyze the influence of different variables, an experimental composition design will be taken into account. Meanwhile, the numerical simulation will be done to indicate the failure behavior of this binary recycled aggregate mixture with two distinct particles of masonry and crushed concrete.

## Expected Results

The prediction model of cement treated construction waste may be put forward experimentally and its failure behavior can be simulated numerically.

## Preferred Partners Applications / Sponsors

Road and Railway Engineering/ Chinese Scholarship Council

## Research Period

2008 - 2012