

Instrumentation of Urban Pavements Built with Construction and Demolition Waste

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Abstract : This work shows a detailed review of the scope of global research on the road infrastructure using materials from Construction and Demolition Waste (C&DW), also called RCD. In the first phase of this research, a segment of road was designed using recycled materials such as Reclaimed Asphalt Pavement (RAP) on the top, the natural coarse base including 30% of RAP and recycled concrete blocks. The second part of this segment was designed using regular materials for each layer of the pavement. Both structures were built next to each other in order to analyze and measure the material properties as well as performance and environmental factors in the pavement under real traffic and weather conditions. Different monitoring devices were installed among the structure, based on the literature revision, such as soil cells, linear potentiometer, moisture sensors, and strain gauges that help us to know the C&DW as a part of the pavement structure. This research includes not only the physical characterization but also the measured parameters in a field such as an asphalt mixture (RAP) strain (ϵ_t), vertical strain (ϵ_v) and moisture control in coarse layers (%w), and the applied loads and strain in the subgrade (ϵ_v). The results will show us what is happening with these materials in order to obtain not only a sustainable solution but also to know its behavior and lifecycle.

Keywords : sustainable pavements, construction & demolition waste-C&DW, recycled rigid concrete, reclaimed asphalt pavement-rap

Conference Title : ICSPET 2021 : International Conference on Sustainable Pavement Engineering and Technology

Conference Location : Rome, Italy

Conference Dates : July 22-23, 2021