

Lecture Notes in Civil Engineering

Applying the Deconstruction and Reuse Evaluation (DERUE) Tool to Evaluate the End-Of-Life Circularity Potential of Building

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Construction and demolition generate large amounts of waste that is directed to landfills. This means the valuable resources and productive land are lost. As a result, there is an increasing interest in recovering materials and components from buildings that have reached the end of their useful life and reusing these in other buildings. There is, however, limited research and guidance in this area. This study aims to contribute to addressing this gap by developing and testing a methodology for the deconstruction of buildings and the reuse of components and materials. The study shows how a tool, referred to as the Deconstruction and Reuse (DERUE), is developed. The DERUE is presented and tested by applying this to a case study building. Results from the application of the DERUE are used to critically evaluate the tool and its value as means for supporting deconstruction and reuse. The results indicate that the DERUE is a useful tool for deconstruction planning, by providing reports that categorise and quantify materials and components in a building by type, condition, extractability, and reusability. DERUE reports enable the value of deconstruction to be more readily understood and can be used to encourage building owners, contractors, and municipalities to deconstruct buildings and reuse components instead of demolishing buildings and directing materials to landfills. The study recommends that the tool is developed and refined by applying it to a wide range of buildings.