Reusing Reclaimed Lumber and Flooring in Construction: Measuring Environmental Impact using Life-Cycle Inventory

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With green building concepts becoming mainstream in the construction field, building professionals such as architects and building contractors need design tools to evaluate the environmental impacts of their building practices. One new building practice includes reusing reclaimed wood materials and the potential environmental impact reduction. Framing lumber and wood flooring are two commonly reclaimed materials from deconstruction (building removal) sites reused in new buildings and remodeling projects. This paper presents materials and energy data collected from the deconstruction industries through an intensive survey exercise using Consortium for Research on Renewable Industrial Materials Research Guidelines. A life-cycle inventory (LCI) approach will be applied for tracking the reclaimed material. This will show how the material flows through the different unit processes beginning at the deconstruction site and ending at a new building site. Modeling the weight-averaged material and energy data will provide an estimate for the environmental impact of the two reclaimed materials. Results from the LCI will show the energy and carbon footprint from such material recovery and the associated transportation. This will provide building professionals a design tool to directly and accurately assess the environmental consequences (as measured by carbon and energy release) when specifying virgin or reclaimed materials.

Key words: Reclaimed building material, wood flooring, framing lumber, life-cycle inventory, LCI

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