

Abstract

This research has 5 objectives: (1) to study types and amounts of materials used in design process of the common area of middle tier single detached house projects, (2) to evaluate satisfaction of materials in common area after uses by occupants, (3) to study and assess environmental impacts from materials used in common area by simplified Life Cycle Assessment (simplified LCA), (4) to analyze high eco efficiency materials for environmental and satisfaction, and (5) to present guidelines for selecting materials in order to enhance sustainable development. The research was done by surveying types and amounts of materials used in 7 projects of middle tier single detached house projects, performing Post Occupancy Evaluation (POE) of material satisfaction from 100 questionnaires, performing environmental impact assessment by the simplified Life Cycle Assessment, and analyzing the criteria in selecting the high eco efficiency materials that enhance post occupancy satisfaction and reduce environment impact.

This research found that the materials used for enhancing post occupancy satisfaction and reducing environmental impact must be changed by increasing the uses of high level of eco-efficiency materials such as gravel and stone while decreasing the uses of low level of eco-efficiency materials, i.e. wood lath and cement block in floor work. Concrete should be increased while wood lath and mortar should be reduced in wall work. Metal sheet and polycarbonate should be increased while other materials should be reduced in ceiling work. In addition, vinyl should be increased while aluminum should be reduced in door & window work. Moreover concrete and lime stone should be increased while steel and ceramic should be reduced in decoration work. The results from this research can increase the ratio of eco efficiency material selection to more than the existing ratio of 23.81% and can help architects choose the materials that advantageous to both users and environment.