Building Back Better:
Design Recommendations for Post-Disaster Construction Following Typhoon Yolanda

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When Super Typhoon Haiyan, locally known as Yolanda, slammed into the Philippines in November of 2013, it left in its wake an estimated PHP 571 billion (USD $12.9 billion) in losses and more than 1.1 million homes damaged, half of these completely destroyed. This report outlines work conducted as a practicum in the Engineering for Developing Communities program at the University of Colorado Boulder under the organization, Build Change, in support of reconstruction activities in the province of Eastern Samar. Build Change is an international non-profit social enterprise that designs earthquake and typhoon resistant houses in developing countries and trains builders, homeowners, engineers and government officials.

The practicum activity consisted of three primary tasks: (1) research on properties of coconut lumber as a building material; (2) preparation of design recommendations for timber construction and; (3) assistance in preparing residential design and construction guidelines for government and non-governmental (NGO) stakeholders in the Philippines. Recommendations on selection of coconut lumber are offered as well as a summary of studies conducted to date on structural properties. The results from analysis on two pilot timber structures are presented along with four alternative main wind force resisting systems: (a) diagonal sheathing; (b) braced post and beam; (c) plywood sheathing and; (d) metal X-strapping. Finally, simplified residential design and construction guidelines created for broad distribution are discussed.

Lessons learned from the experience conclude the report, offering insights into cross-cutting themes that emerged from field work over the two month practicum. In particular, discussion around observed governance capacity, the beneficiary selection process, and community resilience are highlighted.