

## Sustainable Urban Prototypes and Informal Settlements



### Introduction

In Metro Manila, the pressure for rapid urbanization has led to an explosion of two opposite, yet related phenomena: the development of intensive clusters of high-rise buildings and the formation of dispersed patterns of informal settlements. In the near future, the Pasig River Rehabilitation Program will lead to dramatic shifts in the city's fabric, including the relocation of large sectors occupied by informal communities. Under this program, BaSECo compound – was selected as a priority area for substantial urban renewal. As a result, the local community was living under the threat of eviction for many years. Although this government-led initiative aimed to resettle the residents on-site instead of relocating them outside the city, the need to establish an integrated approach to implement long- and short-term strategies for the community is still pressing.

### Methods and Strategies

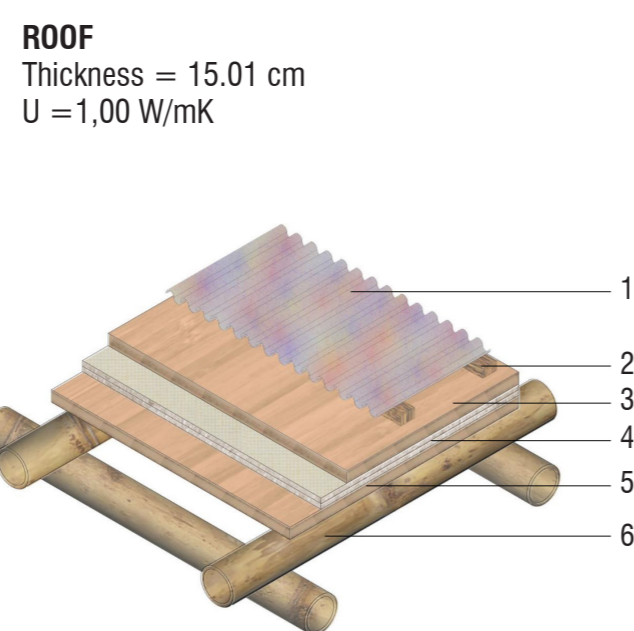
One of the key questions explored in this study is how action research can become a strategic tool for experimenting with alternative strategies in the revitalisation of informal settlements. In particular, this article will explore the potential of on-site research and design activities as educational tools for teaching about the processes of urban informality. Furthermore, the use of temporary urban interventions realised with the participation of the community was a preliminary attempt towards a wider revitalisation strategy that aims to develop an inclusive approach where a mix of academic investigation, teaching, and design form a symbiotic and synergistic effect. Using the BaSECo compound as a pilot study, this academic research aims to explore the complex dynamics between informal and formal processes by facilitating the translation of short-term, bottom-up practices and community knowledge into long-term, top-down strategies.



#### BUILDING MATERIALS AND PERFORMANCES \*

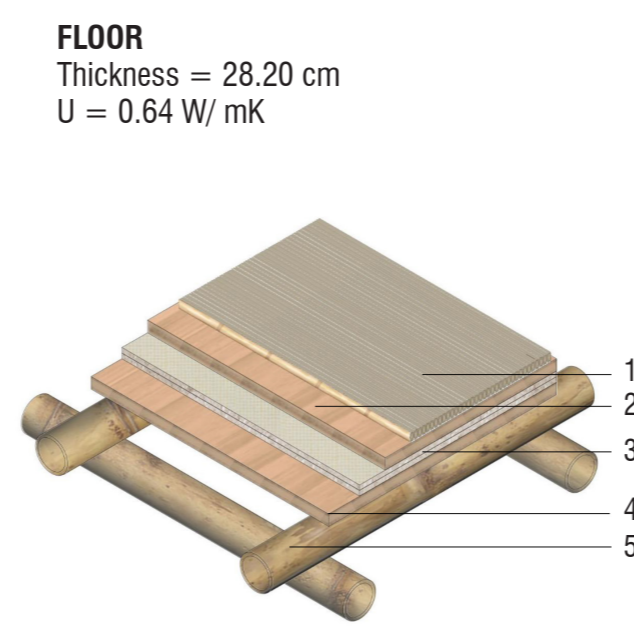


Through the study and use of local, sustainable, recycled and recyclable materials such as bamboo, tetrapack, coconut and palm fibers and coconut palm wood and their derivatives, various stratigraphies have been studied to improve the building's thermal performance in tropical areas.



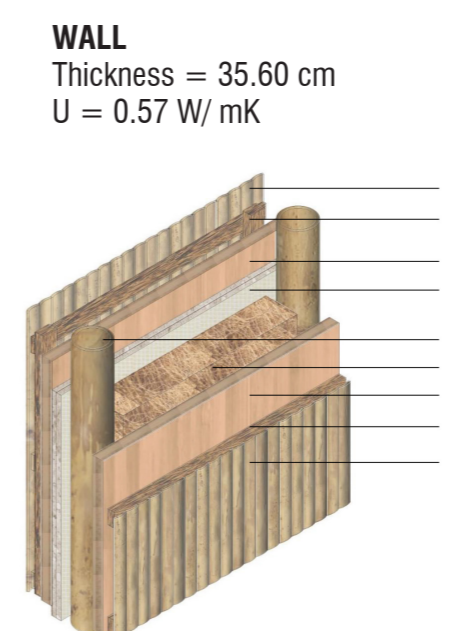
**ROOF**  
Thickness = 15.01 cm  
U = 1.00 W/mK

1. Recycled tetrapack sheet coating
2. Coconut wood lath
3. Laminated bamboo panel
4. Double insulating panel in recycled palm fibers and natural minerals
5. Laminated bamboo panel
6. Bamboo structure



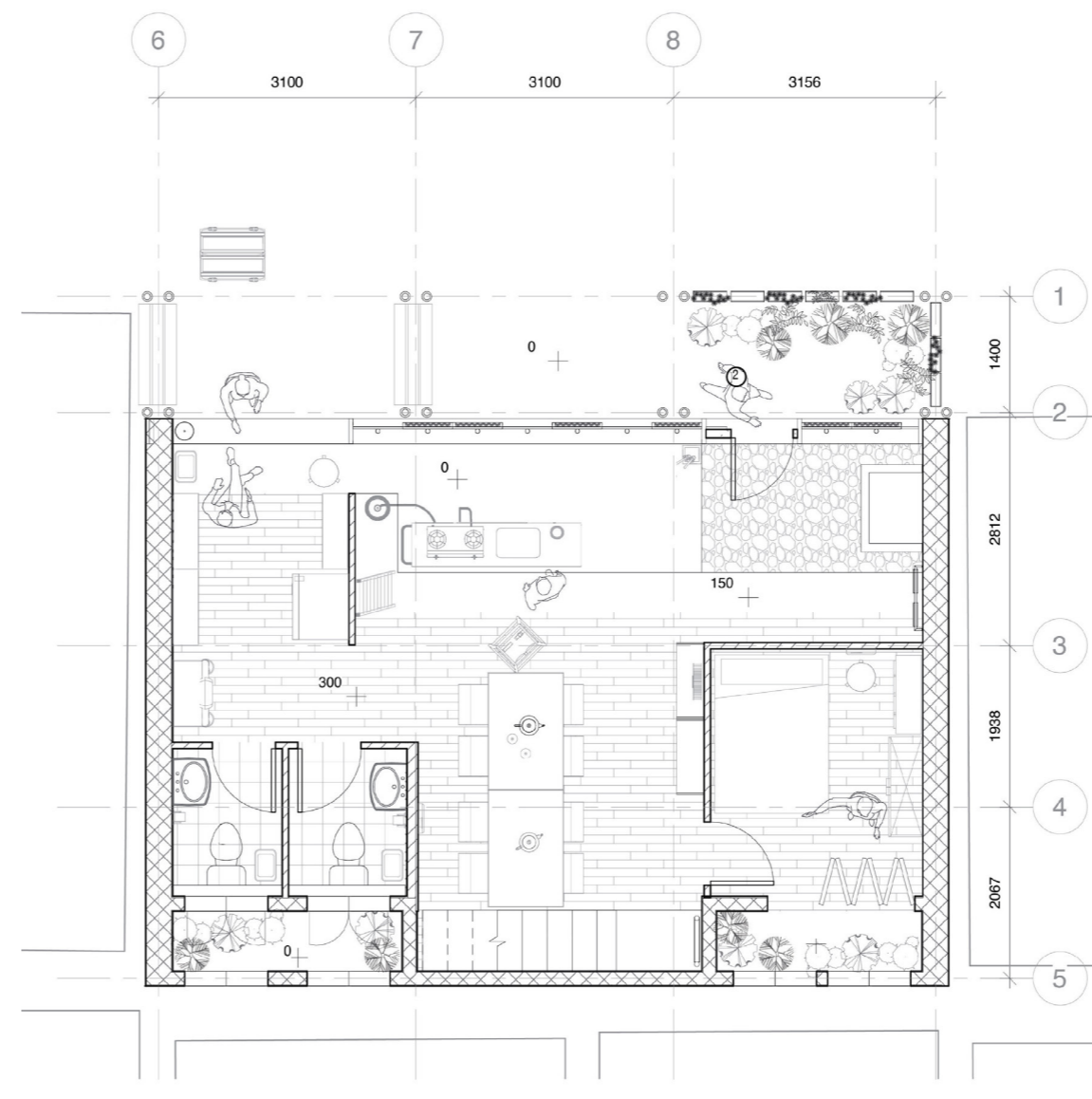
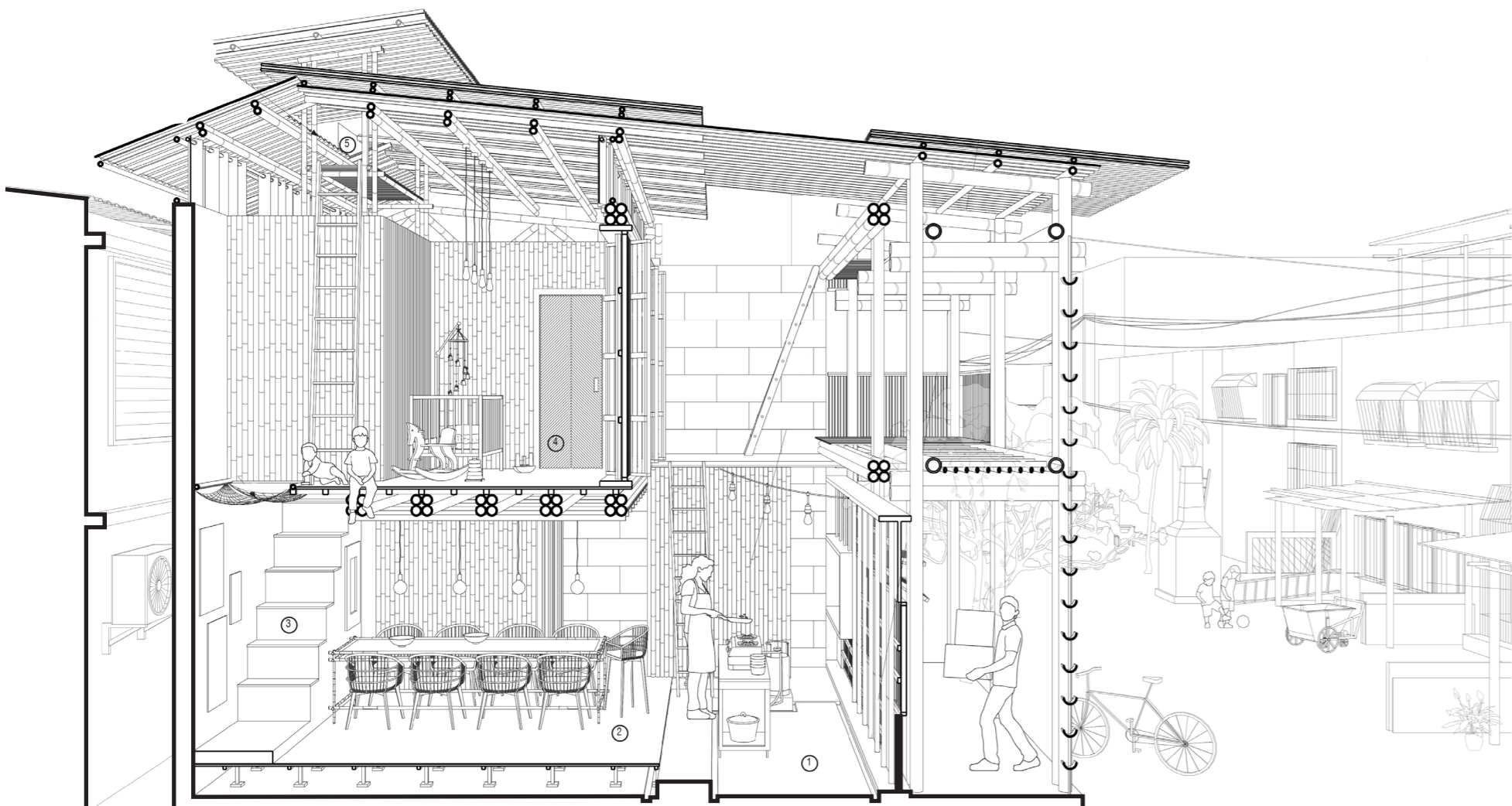
**FLOOR**  
Thickness = 28.20 cm  
U = 0.64 W/mK

1. Flooring in sectioned and coupled bamboo culms
2. Laminated bamboo panel
3. Double insulating panel in recycled palm fibers and natural minerals
4. Laminated bamboo panel
5. Bamboo structure



**WALL**  
Thickness = 35.60 cm  
U = 0.57 W/mK

1. External covering in split bamboo
2. Coconut wood lath
3. Laminated bamboo panel
4. Double insulating panel in recycled palm fibers and natural minerals
5. Bamboo structure
6. Double insulation panel in coconut fiber
7. Laminated bamboo panel
8. Coconut wood lath
9. Internal covering in split bamboo



### Long-term Sustainable Architecture

The pilot interventions realised in BaSECo allowed the research team to understand how local authorities and the community responded to the initial stages of the upgrading plan, guiding the way for potential future plans. We are currently working on the feasibility study for the new BaSECo Learning Centre, a two-storey multifunctional space where the community will hold educational and social activities. The new building will replace the existing community centre, which cannot be upgraded due to structural problems. It will be conceptualised by combining traditional materials and techniques and advanced structural and energy concepts so to guarantee sustainability over time. The use of local materials, easily available and known to local inhabitants will ensure not only a low environmental impact of the project, but also the possibility that the building can be maintained over time by unskilled labour force. The structural typology based on bamboo (the local *Bambusa Blumeana*) takes into account the necessary resistance to extreme weather and flood risk. The volume of the building and its orientation, the arrangement of the openings and the stratigraphy used for the envelope have been studied and calculated according to the specific climatic context to ensure high conditions of internal comfort even in the absence of mechanical systems. The goal was to offer the local community an example of best practices in construction to be used in future interventions. By working on this project, we aim to establish a process in which to explore, in a more systematic way, the interfaces between informal and formal practices, where the involvement of the community is substantial, both in terms of design as well as construction and maintenance.

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