Housing Research and Development Unit University of Nairobi

Discussion Paper DP 5.

Technical and design Aspects.

P. O. Box 30197 Nairobi / Kenya Tel. 27441 Ext. 212

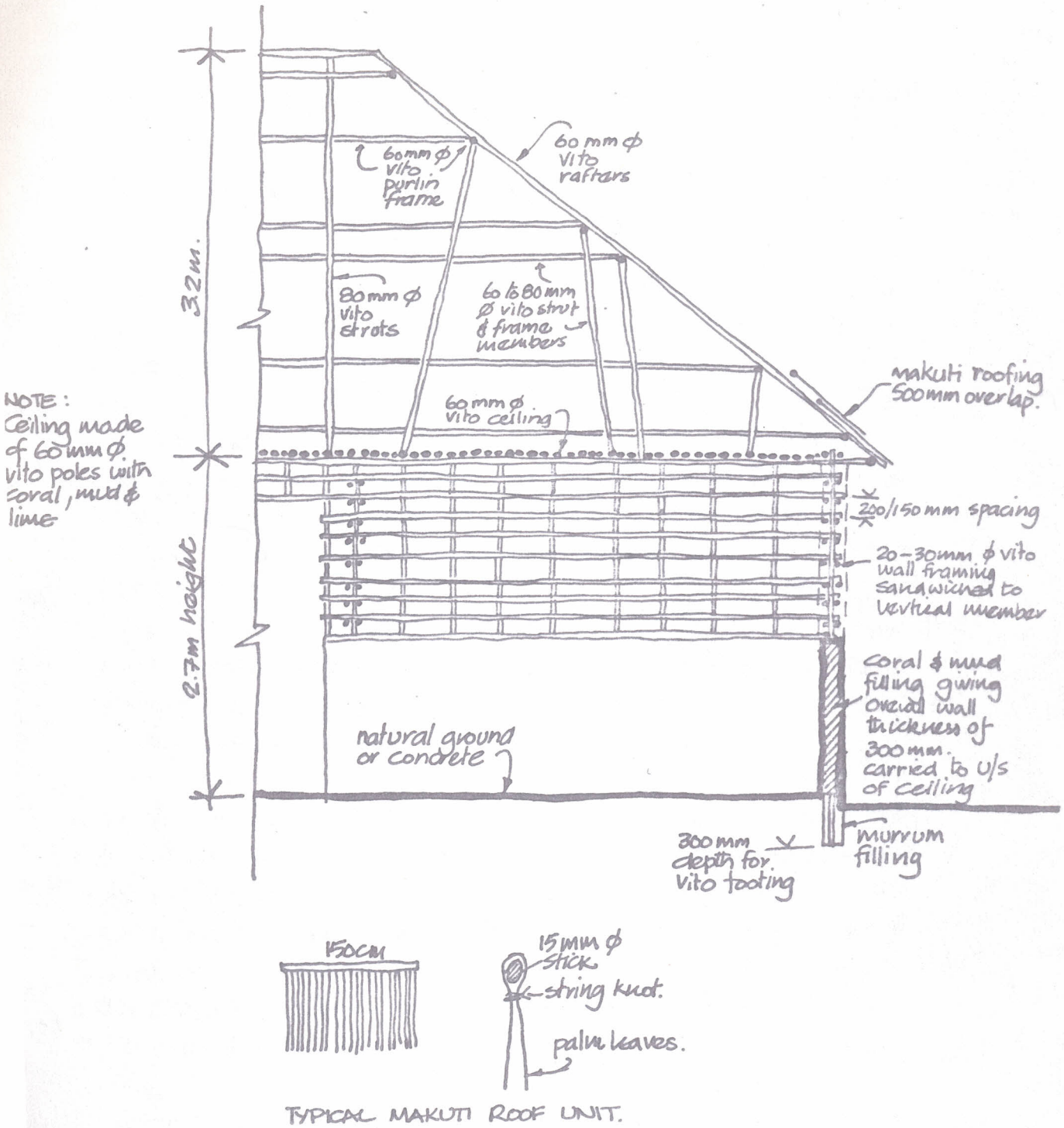
At the lake there is a greater variation between day and night temperatures and therefore lightweight walls are not so valuable. However where heavy wall construction is used in large compactly designed huoses it is ESSENTIAL to ensure that the houses are efficiently ventilated and that internal walls allow a good cross-ventilation. Lightweight construction with timber frames and infil panels, plastered externally and faced internally, are valuable on the lake plains where expansive black cotton soils are found as the frames, if properly constructed, can accept structural movement much more easily than heavy solid construction.

6.4.7 Roofs both at the coast and around Lake Victoria should be lightweight and well insulated. Sheet roofs (especially g.c.i.) without ceilings provide the worse possible conditions. At the coast g.c.i. suffers severely from corrosion thereby initially reducing its refelctive value and subsequently shortening its life.
The traditional roof of 'makuti' at the coast is ideal when used with a ceiling. However it is too often considered as a temporary form of construction by the authorities. Yet many of the prestigious tourist hotels recently created have made considerable use of makuti for roofing. As a material it has the advantages of:

a local material
a traditional form of construction
a lengthy knowledge of its use
a cool material allowing maximum ventilation of the roof space.
easily maintained.

4 Its main disadvantage is that it often allows mosquitoes to enter. However such problems can be avoided by the provision of a ceiling. Such ceilings could be of plasterboard or the traditional ceiling of mangrove poles, stones and lime plaster as found in Lamu (see Figure 6.2). Certainly such a form of construction is to be found in the low-income majengo areas of Lamu. Such a ceiling has the added advantages that:

i) should the makuti roof catch fire the occupants of the building have time to escape with their possessions.



TYPICAL MAKUTI ROOF UNIT.

FIG. 6.2. TYPICAL COAST (DIGO) CONSTRUCTION

Source: Study for Diani Tourism Study
Kenya Coast Planners Ltd., June 1974

ii) the ceiling restricts the spread of a fire from inside the dwelling to the thatched roof.

At the lake the provision of ceilings is also valuable in reducing the impact noise of rain at night.

6.4.8 In this zone, as has been stated, ventilation to maintain air movement is essential for human comfort. However the intense sunlight and high solar temperatures do not necessitate large areas of glazing. Thus whilst 40% of north and south walls need to be openable, the glazed part should not exceed 20%. Therefore casement windows with large fixed glazed areas are NOT to be recommended. Aluminium glazed louvres or timber unglazed shutters are ideal for the coast. The timber louvred shutters in particular allow air to circulate but exclude direct sunlight. They are especially useful if side hung so that they can catch and deflect the breeze.

It is important that all forms of permanent ventilation (perforated blocks or timber shutters) are fitted with an anti-mosquito mesh so that whilst air can circulate at night, mosquitoes are excluded. It has been noted that the Kisumu building by-laws make it obligatory to fit fly-screens to all openings. Such an obligation should also be applied at the coast.

6.4.9 The traditional concept of high internal room heights making a building cooler have been disproved especially where an uninsulated sheet roof is used. Internal discomfort can be increased by raising the height of the roof if, as a result, less shade is provided to the walls. It is far more important to reduce the penetration of solar heat through the roof either by:

a. an insulating layer
b. a ceiling with a ventilated space between the roof and the ceiling.