APPROPRIATE FOUNDATION TECHNIQUES FOR LOW COST HOUSING IN LOW LYING MARSHY AREA IN COLOMBO.

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Over the years the city of Colombo has grown along the coastal belt (North-South) skirting the vast expanse of low lying marshy lands to the east. Accelerated pace of development that was seen since late seventies has imposed severe strain on available -easily buildable- lands, and it became inevitable to utilise these urban low lying areas for development purposes. By the early eighties, in spite of planning, much haphazard development was taking place in these low lying areas. Largely due to lack of information, as to the nature and engineering behaviour of the sub-soils, construction often took place using conservetaive design practices providing costly foundations or on the other hand without providing adequate foundations which could withstand large settlements that the structures would undergo. Soon after construction many buildings developed foundation and structural problems endangering their safety and stability thus requiring very costly treatment for their repairs and restoration. Thus the combined high costs of construction made it almost impossible for the low-income groups to build houses in these urban low lying areas. While national emphasis was laid on provision of affordable shelter to the homeless people, a comprehensive study was carried out by the National Building Research Organisation in the mid-eighties to develop appropriate foundation techniques for low cost housing in marshy areas. The objective of this study was broad based and envisaged improving the current planning, design and construction techniques to achieve significant economy in construction on marshy lands.

The study included monitoring of old and newly constructed buildings in reclaimed marshy areas in and around Colombo. The observed performance of these buildings have given valuable information on the performance of foundations under varying conditions generally expected in such areas.

This paper analyses the different foundation types and techniques that have been used and discusses their relative merits. It is observed that buildings are often supported over a fill of reasonable strength and hence generally safe against shear failure of the ground. Therefore, in such cases, the major criterion for "appropriateness" of a foundation technique for marshy areas centers on its ability to withstand excessive ground deformation. Importance of a controlled earth fill, rigidity of both substructure and superstructure and soil structure interaction is highlighted in this paper.