**C 141**

**Feasibility of optimum type designs for houses**

The inflation of the cost of building materials is much higher the average increases in people's incomes. Therefore the construction costs of house are becoming more and more difficult to afford. One way of arresting this problem is by the use of optimum designs for houses. Further the inflation of timber prices is much higher than the other building materials. Therefore optimum design methods to reduce the use of timber or to replace the use of timer will have a good potential for application. Hence the roof and the ceiling have a high potential for the application of optimum designs.

The main objective of the study was to establish the feasibility of new methods for roofs and ceilings. Several optimum type designs were carried out with the aid of computer and for the use of available steel sections such as T, L, flats etc. these designs were compared with published optimum timber designs. The costs of designs were calculated using standard estimating methods as well as obtaining quotations from steel fabricators. Further life cycle costing was incorporated since different materials have different life spans.

It was found that the optimum steel designs could reduce the cost of roof by 6.9% to 8.25% while for ceiling cost can be reduced by 48% to 51%. The combine ceiling and roof can reduce the cost by 14% to 19%.