Research news and notes

BUILDING RESEARCH IN THE SCHOOL OF ARCHITECTURE

R. M. Thompson*

The first anniversary of the construction of a temporary and very modest laboratory building, and the appointment of its first laboratory technician, recently passed unnoticed in the School of Architecture, but in fact, was being celebrated by contruction of an even more modest extension to house a temperature and humidity controlled room for storage and possible longer term testing of timber and plywood components.

During the last year, some basic test facilities have been established, including a loading frame for panels up to about six feet square. To date, tests in shear and bending (face loading) have been carried out by a Masters' candidate on several prestressed, grouted reinforced and unreinforced 4" brick and block work panels as part of an investigation into improving the seismic resistance of brick and masonry components and buildings. Feasibility studies using the results of these tests and those from Pacra and the Canterbury Engineering School are being performed for some building types ranging from domestic to a six-storey building using double-skin (cavity) prestressed brickwork (4") as structural shear walls.

A continuing undergraduate test program has started and preliminary investigations have been made into the load-deflection characteristics and overall performance of shear panels constructed from timber framing clad with conventional lining materials such as gibraltar board, hard board, fibrolite. By modifying standard fixing practices, greatly improved strength and cracking performance can be obtained. Some notes on this programe may be supplied to a later issue of this Bulletin.

Two graduate students are enrolled for work in the timber and plywood fields and some testing will be carried out by both of these students. The first of these is investigating the use of timber in multi-storey buildings and part of his study is concerned with the problems of jointing in heavy framed construction. The second student is concerned with industrialised building using constructional plywood and his program involves development, experimentation and feasibility studies. Load-performance testing will be carried out on ply clad panels and their fixings. Close contact is being maintained with other research establishments such as the Forest Research Institute.

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For some years, the writer has been investigating the dynamic properties of buildings, including a two-storey, approximately half scale, reinforced concrete framed structure. Progress has been painfully slow, but this program is continuing.

Building research, especially constructional research, in the School of Architecture is in emphasis more innovative and exploratory than operational or detailed analysis.

While it is difficult to draw dividing lines, the accent is more on synthesis than on analysis; on design criteria rather than refinements in analytical procedures. Such an approach is perhaps open to some criticism and the writer would welcome comments. Improvements in testing facilities and more technicians will help our work, but are unlikely to change the basic philosophy which aims to make best use of undergraduate as well as graduate capabilities.

Current Graduate Research into Structure and Construction

K.L. Albert (M.Arch Candidate) "A Consideration of Earthquake Forces on Buildings and their Components".

G.L. Pitts (Ph.D Candidate) "Industrialised Building using Constructional Plywood".

G.M. Tonks (Ph.D Candidate) "Timber in Architecture".

R.M. Thompson (Staff Research: Ph.D Candidate in Engineering) "An Investigation of the Dynamic Properties of Structures".