New: a prefab plaster wall finish

Legget, R. F.

Publisher's version / Version de l'éditeur:
https://doi.org/10.4224/40003250
Housing Note (National Research Council of Canada. Division of Building Research); no. HN-1, 1962-11-01

NATIONAL RESEARCH COUNCIL
CANADA
DIVISION OF BUILDING RESEARCH

HOUSING NOTE NO. 1

NEW:
A PREFAB PLASTER WALL FINISH

by

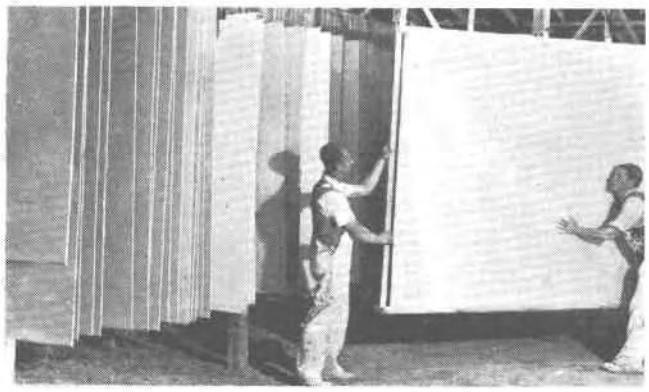
Robert F. Legget

Reprinted from National Builder,
Vol. X, No. 2, February 1961, p.27

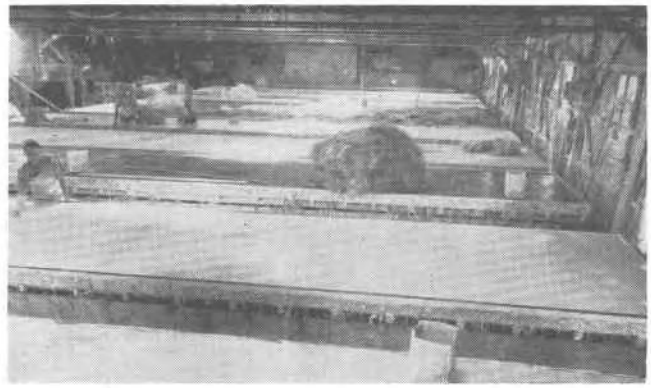
NOTE

This is the first of a new series, *Housing Notes,* to be issued by the Division of Building Research, National Research Council. The series will consist mainly of reprints of articles that first appeared in the National Builder and the Canadian Builder. They have been written specifically for the information of house builders and are now issued in this form for their convenience.

Requests to be included in the mailing list to receive copies of *Housing Notes* as they are issued, or requests for extra copies, should be sent to: The Editor, Division of Building Research, National Research Council, Ottawa 2, Canada.



FIBROUS PLASTER SHEETS for interior wall finish are hung to dry in Australian factory. When dry, the sheets can then be cut to exact size for intended wall, with necessary openings. The installed job looks like a combination of drywall finish and plaster coat finish.



STEEL FORMING PLATES are basis for manufacture of sheets. Plaster is poured into form and reinforced by carefully prepared fibres of sisal which are dropped into wet plaster and forced further by light wooden lath rollers. Screeding is done by hand finishers.

New: A prefab plaster wall finish

DBR/NRC suggests Canadian builders should find cost savings in the Australian technique of building homes with inner walls that are finished off with manufactured fibrous-plaster sheets which have been cut to size and shipped to the job-site for simple installation.

by ROBERT F. LEGGET
Director, Division of Building Research,
National Research Council

A type of wall finish that combines the advantages of dry-wall finish and of the usual type of plaster coat has long been in wide use in Australasia. It is specially suitable for house construction but can be used in any type of small building. There appears to be no reason why it could not be used in Canada with satisfactory and economical results. The writer was so impressed by what he saw of the method in use in Australia that he has mentioned it to many friends in the Canadian building industry. Their interest has suggested the desirability of publishing this short description.

Basically, the system consists in making under factory conditions thin sheets of plaster reinforced in an ingenious way so that they are strong enough to be handled as loose sheets as soon as the plaster has set. The drying-out process can therefore be carried out under controlled conditions. When the sheets are ready for use, they can be cut to exact size — as large as the whole side of a room — transported from factory to building site by truck, easily handled and set in final position by simple attachments.

To those unfamiliar with "fibrous plaster" (as the system is known), this summary account probably sounds too good to be true. The writer may therefore usefully record that he saw sheets measuring 24 ft. by 9 ft. being made in a small six-man plant outside Melbourne, Victoria, at the rate of 8 sheets in one working shift from one machine. He saw sheets being transported economically and without any difficulty for distances up to 50 miles from the manufacturing plant. And he saw finished houses, the inner walls of which were better finished than many conventionally plastered walls, giving no indication that the plaster had been cast in a plant many miles away.

Key to the system is the use of a matted reinforcement consisting of very carefully prepared fibres of sisal. This is a vegetable product obtainable in Indonesia and East Africa. Substitute materials have been tried in Australia, especially during the war years when sisal was in short supply. Coir and omat obtained from the husks of cocoanut were found to be the best substitutes but they are "harsh" in use. Greased condemned rope was also used but any grease remaining on it caused staining of the resulting plaster sheets. Flax tow, the discarded fibre from the production of flax, has also been used but is the least satisfactory of the alternatives.

Essential to the manufacturing process is a well-founded, flat steel casting bed, the face of which is perfectly smooth and truly level. Dimensions may vary up to 35 ft. long, 9 ft. wide, and about 2 ft. 6 in. high. A steel lip, slightly thinner than the required thickness of the finished sheets, surround the steel plate thus forming the mould in which a sheet will be cast.

The necessary supply of sisal is prepared on an adjacent table. It is usual to cut the fibres to a length of about 18 in. from their normal length of from 3 to 4 ft. The sisal must then be "fluffed up" so as to give a uniform texture to it, with the individual fibres completely intertwined so as to give a continuous mat-like structure when compressed. The final preparations are the cleaning and careful greasing of the steel casting bed, and the mixing of the necessary batch of plaster with water in a bucket that can be traversed along the full length of the mould, discharging as it moves.

In the process witnessed by the writer, the plaster was poured out of its bucket, quickly spreading over the steel plate to a uniform thickness. Without any delay, the sisal fibres were dropped on to the plaster from an ingenious platform of wire netting immediately above. The sisal fibres were quickly forced into the wet plaster, using light wooden lath rollers, edges and corners being finished by hand. Expert screening by finishers working along the two sides of the working table quickly finished off the sheet in a matter of minutes. After the necessary period for the plaster set, the sheets are removed while held by wooden clips. Air drying is usually carried out by hanging the sheets, by means of the clips, from suitable drying frames.

When dry, the sheets can be cut to exact size for the intended wall. Openings for doors, fireplaces and even electrical receptacles can be cut with precision in the factory, the sheet being ready for installation as a finished wall when it leaves the plant in a specially

designed transport truck. Although awkward in size, the sheets are relatively light and so are easy to handle with a minimum of manpower provided the necessary special tackle is available. The sheets must usually be installed in a relatively incomplete house frame but this merely calls for co-ordinating delivery and construction. Final fastening may be carried out by nailing or by the use of clips attached to the backs of the sheets, gripping with companion clips on the studs.

The potential of the method will be obvious. It is capable of many variations.

Fibrous plaster seems to offer possibilities for introducing further economies (and convenience) into Canadian house building for those who want the advantages of plaster wall finish. With the assistance of its Australian confrères, DBR/NRC has prepared a complete report on the system. Copies of this will be gladly provided to those interested upon application to the writer at Ottawa.