ENGINEERING

Saving on New Housing

Many authorities believe that cutting costs depends upon simplication and standardization of parts plus the application of mechanized methods on the job.

By A. C. MONAHAN

➤ IF YOU ARE going to build a small house for your family now in spite of present high costs, there are small savings that can be made which still give a satisfactory building.

Not much can be saved, it is true, but every dollar counts. Real reduction in building costs will come only with fundamental changes in the building industry. These changes will reach deeply into state and municipal building codes, and into practices of architects, supply manufacturers and distributors, contractors and labor. All share a part in the situation that makes houses cost so much at the present time.

The fundamental changes can not be made in a day or year. For that reason many studies have been made to find ways and means of cutting costs with them unchanged by simplified procedures, standardization of materials in quality and dimensions, and use of factory-built parts, and the use of power tools to replace hand methods.

Standard Parts

Among valuable suggestions of immediate application in home-building are those of the U. S. Housing and Home Finance Agency and of the National Retail Lumber Dealers Association. Others of value are issued by the housing division of the University of Illinois and similar institutions in other states. The use of standard parts seems to be a keynote in all.

Standardized parts, as the term is most widely understood in construction, are standard in dimensions. Under the so-called modular system, all measurements are based on four-inch multiples. Since many coordinated products, such as panel, windows and doors, are now available, houses may be designed with standard parts that need little if any cutting and fitting. This means a real saving in labor costs.

The suggestions of the National Retail Lumber Dealers Association for small houses include:

Modular design coordinating materials using a four-inch multiple.

Adoption of a four-foot planning multiple for lengths, width and height of rooms and interiors.

Use of 16-foot unsupported spans where possible.

Application of finished floor and ceiling material, where feasible, before erection of interior partitions.

Use of pre-cut and pre-assembled materials, particularly in closets and storage walls, partitions, and roof trusses, where practicable.

Use of plumbing wall or shortest plumbing and heating lines possible with proper functioning.

Use of basic home designs subject to easy changes of appearance through positioning on the lot, minor additions, and decorative treatment.

To illustrate the principles recommended by the National Retail Lumber Dealers Association, the organization designed plans for a standard housing unit. It is a one-story affair, 16 feet wide and 24 or 28 feet long. Two units can be used if desired, either in L-shape, or one over the other to give a two-story house.

Model House

The 16-foot width for this model house was selected because it is the greatest space that can be safely spanned by two-by-ten-inch floor joists supported only at the two ends. This width also permits the use of a very simple tied-rafter type of roof truss, readily assembled on the floor and easily lifted into place by two men.

The 24- or 28-foot length was selected because they are convenient multiples of standard 4-foot factory-built wallboard and outside covering. These lengths also permit equal spacing of joists and studs placed either 16 or 24 inches from center to center.

The inside partitions in this house are not erected until the finished floor is down and the ceiling completed. They bear no weight but their own. Laying the top flooring before the partitions are erected means real economy in labor by saving time usually taken in cutting floor boards to fit to partitions and the doors in them. Further economy is secured in this house by placing the bathroom adjacent to the kitchen, so that all plumbing is in one wall.

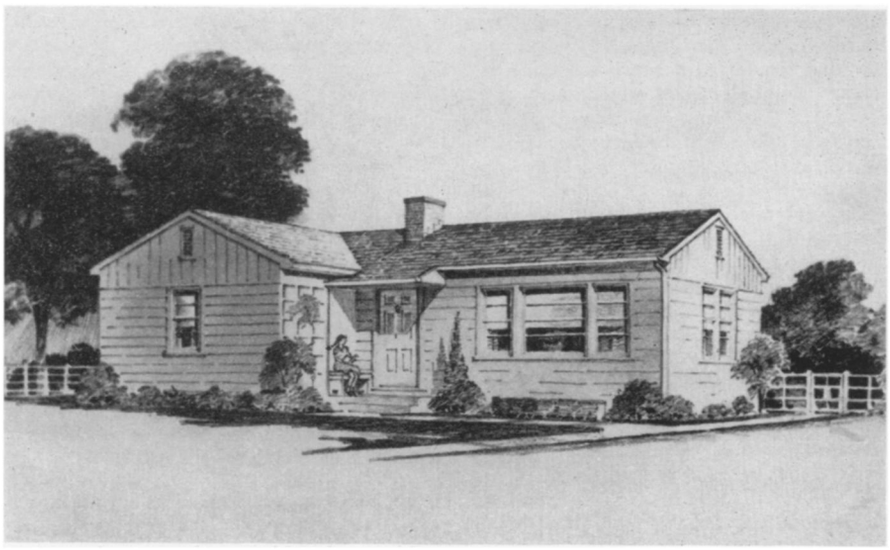
Houses for Veterans

The U. S. Housing and Home Finance Agency has been particularly concerned with low-cost houses for veterans and has prepared bulletins with valuable suggestions. For young couples without family, it recommends an expansible house. This is a building so designed that additions may be made later at the least cost and without destroying its beauty.

One of its original houses is a rectangular affair with kitchen, living room, one bedroom, bath and alcove. It can be lengthened, or enlarged with wings. Converting a window or two into inside doors, and roof attachments, are about all the changes necessary in the original structure when the additions are made.

Other publications of this government office cover such subjects as lower costs through better codes, insulation of concrete floors, earth constructions and planning the house. A particularly interesting suggestion is the use of wood roof trusses for small dwellings.

Definite savings in materials and labor requirements through use of preassembled



L-SHAPED HOUSE—It is made of two standard units suggested by the National Retail Lumber Dealers Association.

UTILITY UNIT—A factory-built Ingersoll utility unit core has furnace, hot water heater, and plumbing to which kitchen, laundry and bathroom fixtures, a part of the unit, are attached.

wood roof trusses make truss framing an effective means of cost reduction in small dwelling construction, the agency states. In a 26-by-32 house, the use of trusses can result in a cost saving of approximately $70.00, and a reduction in use of lumber of almost 30% as compared to conventional rafter and joist construction.

With pre-assembled trusses a roof can be put over the job quickly to provide protection against the weather, and also they permit the use of non-bearing partitions giving flexibility in interior arrangements.

The construction industry as a whole is big business but in operation it is made up of widely separated individual small activities. House construction is a local industry; few contractors of dwelling units operate anywhere but in their local areas.

So long as the single house, separately planned and constructed one or a few at a time, remains the unit of production in the building industry, little cut in costs may be expected. This is particularly true as long as builders are called upon to cut, fit and assemble the numerous parts of a house on the site and by separate workers of various trades.

Those who have studied the present situation seem to believe that progress depends primarily upon simplification and standardization of parts, the use of factory-built sub-assemblies, and the greater use of machine tools and mechanized methods on the job.

Municipal building codes are blamed by many, including the U. S. Housing and Home Finance Agency, for much of the unnecessary high costs of present housing. These codes, almost every city has one, are based on old-time construction practices and old-time materials. They fail to take into consideration newer building materials thinner and lighter in weight that have equal strength with old materials. Many of them prohibit the erection of factory-built complete houses, the so-called pre-fabricated type, because they lack the required wall thickness.

In studies of the high cost of building, many find labor partly to blame. There are restrictive actions on the part of labor organizations which result in increased cost. These include labor agreements which require that certain kinds of work belong to certain labor unions, and no others may touch. The result is the employment of more craftsmen and foremen than otherwise would be employed.

Then there are labor restrictions that discourage or prevent the erection of prefabricated houses or parts that would lessen hand work on the job. Also there are regulations relative to the number of bricks a workman may lay in a day, the width of the paint brush he may use, and the number of apprentices that may be trained.

Labor alone is not to blame for present high costs, however. Government regulations, manufacturers and distributors of materials, and contractors all must share blame. The elimination of restrictive practices that reduce genuine competition among supply dealers and contractors is one step suggested to help greatly in cutting the cost of home-building.