

The term "prefabrication" does not describe the quality of design or structure but simply the building process. Quality must be judged separately, as it must for houses built by conventional methods.

Most people buy tract houses because repetitive construction processes reduce unit costs. If you buy a tract house, select one designed by a reputable architect. These are becoming prevalent and will be the rule if consumers insist upon quality; no builder puts up ugly houses he cannot sell. Complain about shortcomings in design to the salesman and do your fellow consumer a good turn. Some enlightened zoning legislation has given professionally designed subdivisions advantages—freedom in space organization within buildings and within neighborhoods. Seek such a community, because the quality of future residential developments there will be relatively high.

In the final analysis, the value of a house can be judged only in terms of its success as a personal environment for each member of the family in an emotional as well as a functional sense.

As Robert Woods Kennedy remarked in his book, *The House and the Art of Its Design*, "Architecture is not for the ages; it is for the moment."

And as Frederic Heutte wrote in *A Place to Live*, the 1963 Yearbook of Agriculture, "A first principle of beauty is unity. . . . No community is so poor in natural resources or worldly goods that it cannot evolve a pattern of simple, inspiring, self-expression from its soil and surroundings, be it among desert sands or the deposit of a delta. Nature always provides a text, wherever we live."

In the case of a house, it is not a question of a penny saved, but of a penny thoughtfully spent and spent in large measure for intangibles. The values they return do not depreciate but are a constant source of renewal. Often they improve with the patina of age. (RICHARD D. CRAMER)

## A Well-Built House

HOW CAN YOU TELL whether a house you are thinking of buying is well built?

First, get a copy of the plans and specifications. Compare what you can see of the house with what is shown on the plan. Often plans are revised during construction, for better or for worse.

Some general features are not structural but still may be important to you.

Among them are: Which way does the house face? Is the arrangement and size of rooms good? How about natural light and cross-ventilation? Do the rooms provide enough wallspace or storage space? Does the plan permit some flexibility of living arrangements?

These are partly matters of personal taste. If they satisfy your family's needs or preferences, they are good.

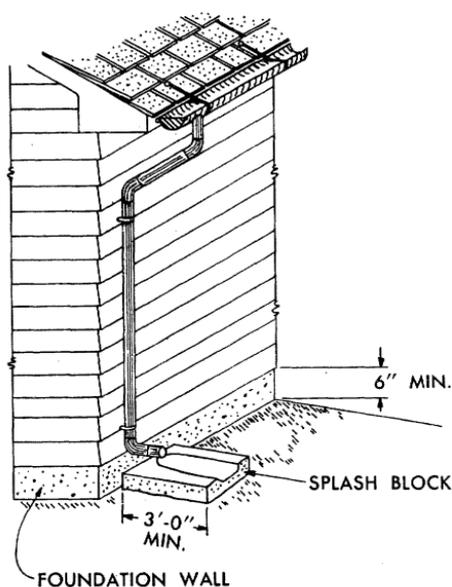
From this we go to the structural parts of the house—the foundation, walls, floors, ceilings, and roof.

START from the outside. Walk around the house.

Look at the foundation walls, which should extend at least 6 inches above the finish ground level. Watch for vertical cracks, which may indicate the structure has settled.

Hairline cracks in the concrete are due to volume changes and have no great significance.

If the concrete is uneven or honey-combed or has broken corners, it probably did not have enough cement or was carelessly placed in the forms—a sign of poor workmanship.



*Good drainage features include slope from the house, splash block, and good downspouts and gutters.*

In block or stone walls, observe the character of the joints. Use a pocket-knife to pick at the mortar and see if it crumbles easily. If so, it is a sign that too much sand or a poor quality of cement was used. A nail driven into the joint will indicate whether the mortar is skimpy there.

If you wish to check the wall thickness, measure through a basement window.

Termites are a hazard to houses in much of the United States. Ask if there are termite shields or soil poison to protect against them.

If the house is built over a crawl space, look inside and check the girders and joists for signs of decay and for moisture stains on the floor framing.

Dampness in the crawl space may be due to lack of proper ventilation. The ventilators should be big enough and so placed that there is cross-circulation.

Whether there is a foundation wall or concrete slab on grade, the slope from the foundation at the grade line should be enough for rain to run off.

Basement window wells must drain readily. Water from the roof should be carried away by adequate gutters, conductors, and downspouts of non-corrosive material.

If downspouts are not connected to a storm sewer or other suitable outlet, splash blocks at the outlet will divert the roof water away.

Check basement window jambs and trim to see if they fit snugly against the masonry wall.

The sills of all windows should have sufficient pitch to drain water outward. Here is a place where decay may have occurred—probing with an icepick or small screwdriver will soon tell you.

AFTER A FINAL LOOK at the foundation walls to make sure the corners are even and walls are vertical, we can inspect the framed sidewalls.

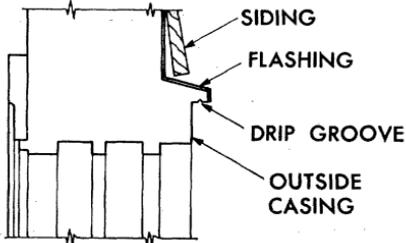
They may be covered with wood or composition siding, shingles, brick, stucco, stone, or other types of enclosing materials. All are good if used properly.

Behind the covering is probably a frame of 2- by 4-inch studs to which is nailed a sheathing material such as wood, plywood, or fiberboard.

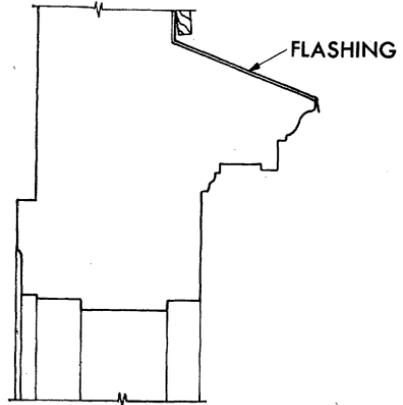
If the siding has been painted, examine the condition of the paint. See if the paint film is dense and opaque, or if the wood is showing through. Check for any gloss on the surface. Painted surfaces that are dull and chalky indicate that repainting is necessary.

The horizontal lap siding should be laid evenly with correct overlap and tight butt joints. At the corners, the siding may be mitered or fitted snugly against vertical corner boards. An end of the siding board should not be exposed to the weather because it will soak up moisture.

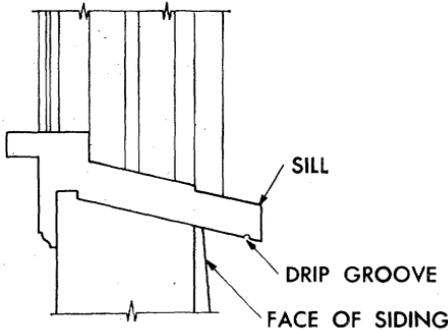
Make sure the nails are of the non-corroding type and that the space between the nailhead and the face of the siding has been filled in before painting or staining. Simply scratch to find out.



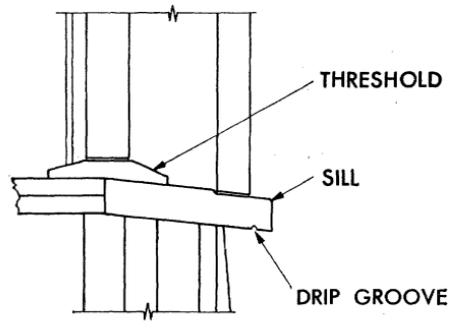
HEAD SECTION



HEAD SECTION



SILL SECTION OF WINDOW



SILL SECTION OF DOOR

*Good construction in exterior windows and doors.*

Windows and doors should have a protective flashing of noncorrosive metal above them. They should be checked for weatherstripping.

Check the sills for sufficient pitch for good drainage. A drip groove under the sill will permit the water to drip clear of the siding.

You have now had an opportunity to form an opinion on the quality of workmanship that has gone into the outside walls. Neat foundation walls, good metal gutters and downspouts, snug-fitting woodwork, and provision for surface drainage all indicate the builder has made a conscientious effort to erect a house that will endure.

Signs that the builder has skimmed

are chipped or honeycombed concrete, loose mortar in the brickwork, large cracks between the ends of the siding and window or other trim, rust stains from an inferior grade of outside hardware, and thin or flaked-off paint in a nearly new house.

**NOW GO INSIDE** the house.

In the basement, look more carefully at the foundation walls, posts, and girders and at the floor joists if they are not concealed by the ceiling material.

The basement floor should be dry. Look for waterstains along the angle between floor and walls. Check to see that all holes where pipes come

through the foundation wall and floor are properly cemented.

The basement floor should slope to the floor drain to permit quick runoff. A concrete floor should have a hard, smooth surface without spalling, cracking, or dusting.

The joists that support the floor above rest on the foundation walls and are intermediately supported by wood or steel girders. These girders in turn are supported by posts or by division walls.

If wood posts are used, they should be set on a concrete base block above the finish floor level.

When wood girders are built up by nailing several members side by side, make sure the members are well nailed together and that joints are over a post or a division wall.

Check to see that the ends of wood joists are not embedded in masonry or the concrete wall, as this practice may invite rot unless there is an airspace at the sides and end of the beam.

The wood joists should be spaced evenly, usually every 16 inches. Examine them for sagging, warping, or cross-breaks.

Look carefully at any joists that have been cut for heating ducts or piping. Notches or holes on the bottom edge or near midspan have the greatest weakening effect.

You may be able to see the grade-mark stamped on the joist, which will indicate the quality of lumber used.

Looking between the floor joists, you can probably see the subfloor. If it is of 1-inch boards, they should not be more than 8 inches wide and preferably laid diagonally to the joists.

Plywood often is used for subfloors. The 4- by 8-foot sheets should be laid with the face grain at right angles to the joists. Small knotholes on the undersurface of plywood subfloor are acceptable.

Check the area between the foundation wall and sill. Any openings should be filled with a cement mixture or a calking compound. The filling will lower the heat loss and prevent the en-

try of insects or mice into the basement.

MOST CONSTRUCTION in the living area will be hidden by various wall and ceiling finishes, but you can check the interior finish and such items as flooring, window or door trim, and other trim.

Examine the trim for any open joints, hammer marks, warped pieces, or rough nailing.

Over the door where the side casings meet the horizontal, the joint is often mitered. If this joint is tight, as all joints should be, you have a pretty good sign of careful workmanship.

Note, too, if the baseboard fits snugly against the flooring and the wall at all points.

Interior finishes are commonly of plaster or of such dry-wall construction as wood or composition materials.

You seldom see plaster cracks in a newly built home, because they develop slowly. In a house a year or more old, the absence of cracks indicates a well-built house. Of course, cracks can be concealed temporarily by wallpaper or a coat of paint.

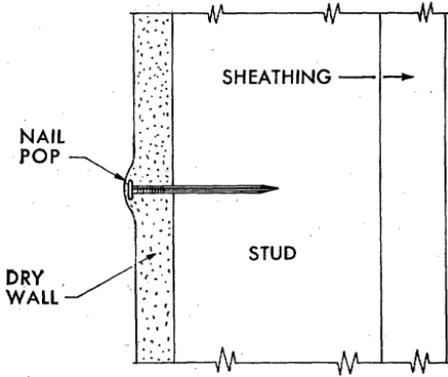
Cracks extending diagonally from the corners of windows or doors may be signs of poor framing or that the house has settled.

If the nails that hold the dry-wall construction in place protrude (referred to as nail pops) from the face of the material, the framing lumber may have been at too high a moisture content at the time of installation. This problem can be corrected by re-driving the nails, but you should take into account the cost of doing this re-nailing.

As you walk over the floors, notice if they squeak or seem too springy. If the floor joists are big enough and the subfloor has been laid correctly, neither fault should happen.

If you wish to check to see whether the floors are level, stretch a string across them.

If the flooring is exposed, hardwood flooring or the harder species of softwood are usually preferred. If carpeting is used, the underlayment may be



*Nail popping in dry wall construction.*

of any material that presents a smooth and firm surface.

Look carefully for signs of nailing. Flooring of a standard thickness is tongued and grooved and is blind nailed along the tongue so the nailing does not show. Small nailheads on the face or top of the flooring mean that a very thin flooring has been used.

Wood strip flooring normally becomes dry and cracks open between the strips in late winter in the colder States. These cracks, if they are not too wide, will close up the following summer.

Do not condemn floors in an old house simply because they are scratched and marred. Perhaps all they need is refinishing. If so, take this extra cost into account.

Perhaps the kitchen and the bathroom have tilework in the floor, on the wall, or wainscot. The tile floor should be smooth, without raised tile or depressed areas.

Wall tiles should fit snugly around all windows, door trim, and around the fixtures. Joints should be calked tightly to keep water out.

Check the doors to see if they swing freely and close tightly without sticking.

Is there a threshold under the exterior doors to keep out snow and cold winds? Some of these doors may have metal weatherstripping.

Are the interior doors hung so as to clear your rugs? Do they interfere with

other doors? Do they latch readily and stay latched?

Check all doors to see that they are not excessively warped.

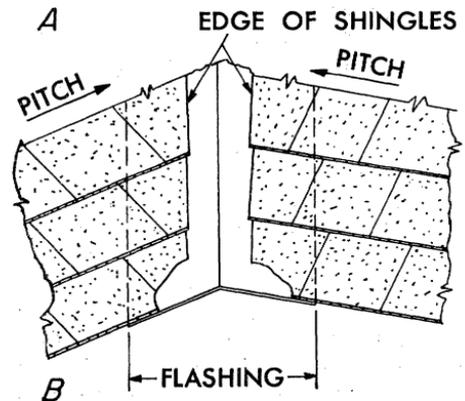
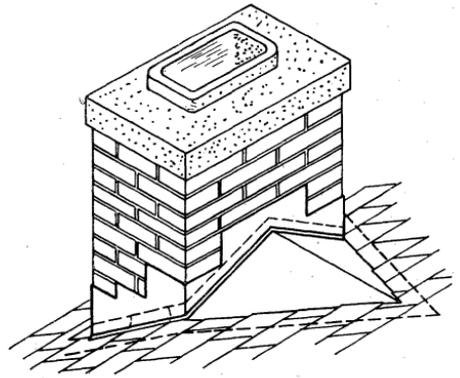
Windows usually are of the double-hung type—the lower sash slides up and the upper one slides down.

Open and shut all windows to be sure they work properly and there is not too much play in the sash. The weatherstripping, if there is any, should not interfere with the ease of operation.

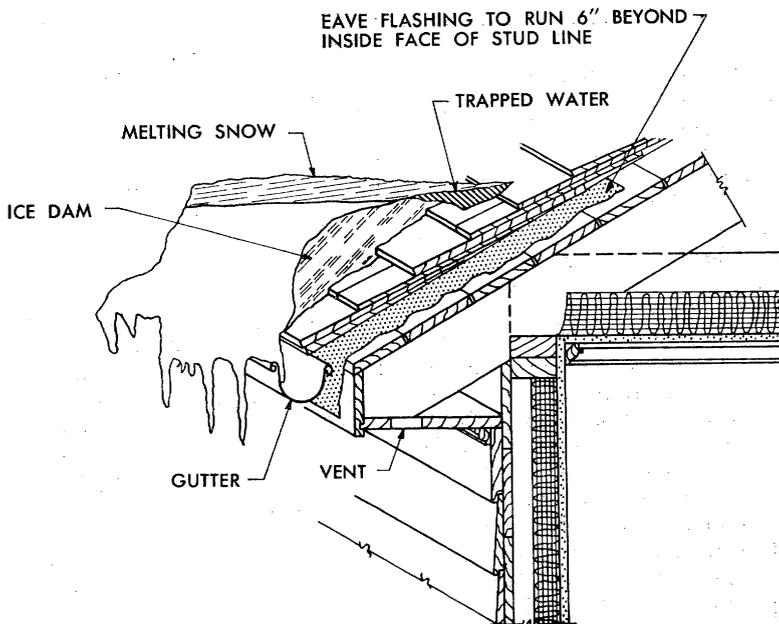
It is a good idea to raise the window shades to assure yourself there are no cracked windowpanes.

Check window woodwork and plaster for waterstains and signs of decay.

Note the kind of glass in the window. Is it clear and flawless, or does it distort objects seen through it? Also see if the putty that holds the glass is in good condition and is painted.



*Correct flashing for A, chimney and shingles and B, valley.*



*Proper eave flashings prevent snow and ice dams.*

IT IS WELL to check the attic area for the thickness of insulation between the ceiling joists and to see if there is a moisture barrier on the room side of the insulation.

Check the attic ventilators. They should be open summer and winter. In summer, ventilation helps to lower the attic temperature. In winter, ventilation removes moisture that may work through the ceiling and condense in the attic space.

Frost on the ends of nails in winter indicates insufficient ventilation and excess moisture.

Check the roof rafters or trusses to see that they are unbroken and that framing joints are tight. Can you see daylight under the eaves?

Lumber grademarks on the rafters will indicate the quality of lumber used.

Waterstaining on the rafters or roof sheathing is a sign of a roof leak.

**INSPECT** as much of the roof as you can.

For most types of shingles, the roof slope should be at least 1 to 2; that

is, the roof should rise 6 inches in every foot measured horizontally.

Among the numerous roofing materials you are likely to encounter are wood shingles and composition shingles. If you can, find out for what period the roof is guaranteed.

Check the flashing at the valleys and around the chimney. They often are the source of leaky roofs.

See if you can see roll roofing under the shingles at the eaves. If it is there, water held by ice dams above the gutters will not work back into the wall and cause damage.

**YOU MAY BE UNCERTAIN** if the joists are big enough or if a crack in the wall or a stain in the plaster means serious trouble. Then maybe you should ask for professional help.

First inquire whether the suspected detail conforms with the local building code. If there is no local code, the detail can be compared with the Minimum Property Standards of the Federal Housing Administration. They may be examined at FHA offices in

most large cities. Perhaps all structural features comply with the local code or with the minimum standards, but that is not always so.

Questions that are more complex or that cannot be answered by comparison with a published standard may require the services of an architect or engineer. Find a man who has a good reputation and is well qualified. The cost of his services may be small compared to the troubles that can arise from a serious defect.

Specific technical questions can be referred to such organizations as the National Association of Home Builders in Washington or to its local chapters in the larger cities.

The Department of Agriculture Handbook No. 73, "Wood-Frame House Construction," shows good construction in detail. You can get it from the Superintendent of Documents at the Government Printing Office in Washington. (L. W. WOOD AND O. C. HEYER)

## House Plans

NOTHING is more important than careful planning when you build a house.

The house plan is a key part of planning. It helps you visualize ideas and needs, shows the relationships of the various parts of the house to the entire building, and is the means of showing others your thoughts and desires. In its finished form, it becomes a basis for financial negotiations and building.

A plan can be developed by modifying an existing plan or by using a step-by-step process in which you consider the various elements and then fit them together by trial and error—on paper rather than in construction. You save money, time, and worry when

you are certain you have good plans.

Whichever your choice of procedure, your family's needs today and for several years must be considered first.

The family requirements are an expression of functional needs according to number, age, health, and occupations and include shelter from the elements, sleep, hygiene, food preparation, dining, recreation and entertainment, clothing care, study, business, and storage.

Resources and physical factors certainly will need to be considered before you make a final decision. Finances, building site, climate, utilities, experience of workmen, availability of materials, and local building codes are among the factors.

Features you will want to plan for include adequate size of rooms and closets; a good traffic pattern; adequate natural and artificial light; convenient kitchens and other workplaces; sound and economical construction practices and materials; pleasing views; good ventilation and an adequate and economical system of environmental control; an efficient and effective plumbing layout; and interiors and exteriors that are pleasing to the eye yet durable and economical to maintain.

The services of an architect to assist in making these decisions and to develop a plan are desirable but not always economically feasible. Thus, an individual usually turns to stock plans and selects one that most completely satisfies his needs.

Minor revisions are practically unescapable, but they should be made with care. Any change in one part of the plan may adversely affect other parts of the plan—and the result may be a disappointment. A discussion of the changes with experienced home-builders can be helpful.

Stock plans are available through the State agricultural extension services and from various private sources, such as suppliers of building materials, magazines, and private plan services.

The Cooperative Farm Building