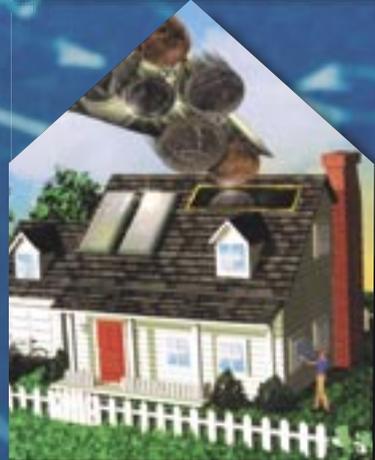


A Guide to Preserving the Value of Your Home

THE HOMEOWNER'S HANDBOOK



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Section 2: The Floor System— What’s Hiding Under The Carpet?

Between the foundation and the carpet, tile, or finished wood that you walk on, there is a floor system. Floor systems come in two general categories: (1) poured-in-place concrete floors (similar to a slab), and (2) floors framed from wood products (such as dimensional lumber or supported by floor trusses). Many homes have both categories, so let’s explore further.

Poured-in-Place Concrete Floors

Poured-in-place concrete floors are similar to slab-on-grade foundations. With both methods, the concrete is poured directly on top of compacted gravel or soil. In buildings that have multiple floors, the concrete is poured over some type of reinforcing material. Such materials could include wooden forms or metal “pans,” with reinforcing rods and cables.

Many of the home’s utilities must be installed beneath the slab before it is poured. Specifically, plumbing drains, waste lines, water pipes, electrical wiring, heating and air conditioning ducts, and other services must be in place.

However, once laid, concrete floors provide a smooth surface for application of floor finishes.

Framed Floor Systems

Most homes have a framed wood floor system. Traditionally, a floor system was made from 2-inch by 8-inch (or 2-inch by 10-inch) wood boards, also known as “dimensional lumber.” Wood I-joists or floor trusses also could be used. This floor sys-

tem, in turn, supported a subfloor made of plywood or oriented strand board (commonly known as OSB). On top of the subfloor, you would have a finished wood floor, tile, carpet, or so on.

Again, time and materials have changed. Now, the floor system often uses laminates of different woods. This is called “engineered lumber.” Engineered lumber weighs less than regular lumber and can be installed more quickly. Factory-fabricated trusses also are available, and are being used more and more. Photo 1-12 (below) shows a framed wood floor system using I-joists. Diagram F (right) shows an I-joist.

Photo 1-13 (below) shows the underside of a floor built on fabricated floor trusses. Notice the spaces between the trusses. These spaces allow room for the placement of ducts, electrical wiring, and pipes.

Diagram F —
Wood I-beam joist



1-12 Framed wood floor system, using I-joists



1-13 The underside of a floor built on fabricated floor trusses

“Floating” Floors

Historically, basement floors were made by pouring concrete over the soil left exposed after digging the basement. With this method, the basement floor and the basement walls were all connected. In some cases, swelling soil would push up against the bottom of these floors. This resulted in humps in the floor, cracks in interior walls above, and warped door frames.

Today, “floating” has become the solution to swelling soils under the basement floor. A floated floor simply means that the basement floor and the basement walls are independent of each other. The basement walls actually hang from the floor above. Between the basement walls and the basement floor there is a gap of about 1 to 2 inches, Photo 1-14a (below). This space allows the floor to float if soils swell. The walls and the home above are not damaged by the floating floor.

Photo 1-14b (below) shows how even the basement stairs can be floated. Just like the basement walls, the stairs hang from the floor above. The only contact with the basement floor is at the very bottom of the stairs. The point where the stairs meet the landing is hinged, allowing the staircase to adjust itself if the basement floor rises.



1-14a Floating wall hung from the floor above (note support strap and gap at bottom)

Finishing Basements

Planning to finish the basement in your home? Before starting, you will need to check the key structural components. This means knowing what type of soil is under your basement, what type of foundation you have, and the type of floor system that was used. Fortunately, these things often are easy to determine.

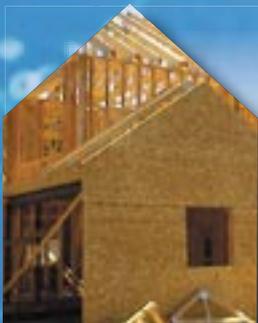
First, find out if the basement floor is a wood system or is concrete poured on grade. Next, you need to determine if soil swelling is a concern. A floating staircase in the basement is a good sign that the builder expected the soil to swell. Another sign would be the presence of compressible material under the bottom of any perimeter foundation wall. Check crawl spaces if your basement foundation wall is not exposed. If you have a poured-in-place concrete floor, further questions should be asked about the soil below.

If there is any chance that the soil could swell, then any new walls should be floated. As discussed earlier, it is important for the walls and the floor to be independent of each other. This way, if the soil under the basement floor rises, the floor can rise without cracking the walls and damaging the home above.



1-14b Hinging at the landing above (arrow) allows the staircase to adjust if the basement floor rises

The Homeowner's Handbook was created to help you understand how your house was built and to preserve its value. It contains basic construction concepts for your home, identifies steps you can take to prevent problems, develops a schedule for routine maintenance, and suggests equipment that can safeguard you and your home.



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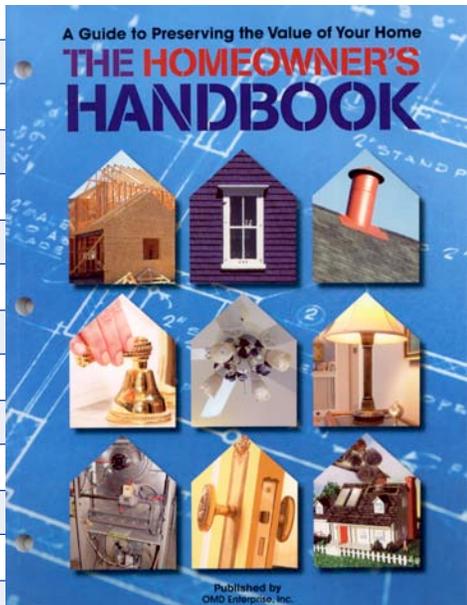
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