

A "10 minute EKG" for evaluating your house foundation.

By The HOUSEPROFESSOR

Here is my recommended "10 minute EKG" for evaluating the foundation of any house. You won't become an expert on structural soundness, but it can help you.

You'll need a strong flashlight and some basic understanding.

The foundation is the masonry that supports the house. Movement of this masonry can be detected by cracks in the walls of the foundation. You can read some meaning into those cracks.

The foundation consists of two parts: the footing and the walls. The footing is a concrete pad that supports the walls, which may be masonry block or poured concrete. (The concrete slab on the floor is not a structural component and almost always has some hairline cracks. These can generally be safely ignored).

Start in a basement corner and look down the wall surface. Make sure the walls are straight (in a flat plane, perpendicular to the floor and ceiling). Inward bulges in the wall mean the earth is shoving inward and is a sign of big trouble. Back off from the wall, walk alongside it, and examine it from top to bottom. Cracks or cracks that have been previously repaired should get close attention. It is important to distinguish between the normal cracks in a foundation and those that indicate structural trouble.

Diagonal cracks starting in the corners and progressively widening as they rise from the floor are very common. They step along mortar joints in a roughly diagonal direction and often occur within the first two years of construction. Small hairline cracks like these are usually safely ignored. Watch out when you spot the following conditions:

- A large diagonal crack that exhibits signs of "recent" movement. It occurs after initial settlement. (Recent movement cracks will have small pieces of cement within the crack. An old crack will be cleaned out of cement).
- A large crack. (If your little finger can fit in it, it is large).
- A long horizontal crack on a perimeter wall.
- A bulge to any wall.
- An offset/non-flush crack. (One side of the crack is at a different depth than the other side).

Cracks large enough to admit your little finger are significant and are best examined by someone with experience. Other signs of recent movement are a crack that was filled with mortar and has reopened; or a crack in a recently painted wall with no paint within the crack.

A common crack is the long horizontal one. These cracks frequently occur a foot or two below the outside soil surface in a masonry-block foundation. They are caused by water that has collected against the masonry, frozen and then exerted inward pressure. This usually occurs because the gutters & downspouts and/or the dirt grade have failed to deliver runoff water far enough away from the foundation. Repairing the gutter, extending spouts and increasing the grade (the slope of the soil away from the house) ordinarily will be sufficient to deal with the problem. Settled outside concrete, which now pitches towards the house, will also need to be corrected. A significant horizontal crack may be a

sign that “pinning” will be needed. Pinning consists of inserting bars into the cores of the blocks and grouting (filling with concrete) around the bars. This greatly increases the tensile strength of the wall. Newer technology uses a fiber mesh for non-extreme cases.

The force of tree roots can also produce large horizontal cracks and bulges. Trees growing within 5 feet of a structure are a concern. Remove the root and pin the wall as noted above.

Vertical cracks are usually found at the midpoint of walls. They can be uniform in width, which generally can be ignored, or they can progressively widen as the crack rises from the floor. This usually means that the wall corners of the house are still settling. This is a cause for concern.

Houses that are still settling usually call for “underpinning” or “shoring-up”, a method of enlarging existing footings to better enable them to handle the weight they support. Houses resting over "Expansive Soils" may even require piers under their footings to transfer their weight to stable soil. Both cases are expensive and a professional evaluation is needed.

Almost all structural problems are related to moisture in the soil. If movement is suspected in a house, drainage is the likely culprit.

As a final step in your house’s EKG, look for settlement in the area round columns or metal post bases (the supports for interior beams). Circular cracks in the slab around posts or columns are bad signs that may indicate that "underpinning" is required.

That’s it. Ten minutes. Do this to your house and call me with any questions, FREE of charge.

