Building Success 101

Q: What is "fly ash" in concrete?

A: Fly ash is a byproduct of the combustion of coal for energy. It collects in the chimney stacks of coal energy production facilities. Government-mandated pollution control devices in those stacks keep fly ash out of the atmosphere and allow it to be collected. The fly ash is added to Portland cement as a supplemental component, replacing "virgin" materials in the creation of concrete products, including poured concrete. As a result, the use of fly ash in concrete reduces natural resource depletion and makes productive use of a previously useless environmental hazard.

Laying the Groundwork

The foundation of a house is its anchor to the earth. It provides the base and the initial dimensions for the structural frame and is a necessary preliminary for every phase that follows, including finishes. The foundation outlines the footprint of your new home. Although it may be invisible to you, you should know about the foundation as you prepare to take responsibility for the care and maintenance of your home.

There are three primary foundation systems for single-family homes in the U.S. These systems include a full-height basement (perhaps finished), a crawl space (the main floor structure is raised a few feet off the bare ground), and a flat concrete slab at ground level.

Some homes may have a "hybrid" foundation that employs two or more of the three foundation types in order to achieve certain design or floor plan features, to accommodate mechanical equipment and their distribution conduits, or to adapt to varying geologic or hydrologic conditions.

In spite of their differences (described in more detail below), all foundation types have two major features in common. First, a foundation of any kind requires a footing to properly anchor it -- and the home above -- to the ground. Footings are usually shafts filled with concrete at each corner of the foundation's footprint, poured to a depth determined by the local building code.

Second, all foundations are reinforced to boost their strength and durability. This is usually done with steel rods called reinforcement bar, or "rebar" for short. Like footings, the number, size, and placement of rebar in a foundation system is prescribed by code.

Basement Foundations. A basement foundation is selected when there is a very deep water table below the house, when the home site is on a sloping lot or when the owners want the option of additional living space below the main living area. Typically built with reinforced poured concrete or stacked concrete blocks, basements are usually full-height to allow everyday use, even if just for storage or the placement of mechanical equipment. If the house is built on a hill, the exposed side or sides of the basement may allow for windows and perhaps a door (called a "walk-out" basement), providing natural light and access to the below-grade part of the basement.

Crawl Space Foundations. A crawl space sounds just like what it is: a foundation in which the walls that form the perimeter of the house are about 3 feet high, spanned across by the structural floor framing materials. The result is an unfinished (though usually insulated) area

under the house populated by duct runs from the heating and cooling equipment, plumbing pipes, electrical wires or conduits, and other system components serving the living spaces above. Also called a "raised floor" system, a crawl space allows convenient (if tight) access to those systems and the structural floor members for periodic maintenance, repair, inspection, or upgrades.

Slab Foundations. Literally, this is a thick slab of reinforced poured concrete with deeper footings embedded at the corners. The slab creates a stable platform for the home's structural frame. Set directly on or slightly into the ground ("on grade"), a slab foundation is typically selected in flat dry areas where digging into the ground is not possible or financially feasible. The monolithic platform created by this type of foundation is ideal for tile floors and carpet. The slab also provides an effective thermal mass, absorbing heat during the day and releasing it at night to maintain a comfortable -- and inexpensive -- indoor climate, another reason for its popularity in desert areas.

There are several less common foundation systems, as well; including insulated concrete forms and permanent wood foundations. However, basement, crawl space, and slab foundations are the prevailing types. Knowing what's under your house can be a valuable piece of knowledge down the road as you live in and with your new home.

At Dickson Development Corporation we incorporate the appropriate foundation system to meet our client's needs.

Warm regards,

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