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How to Build a House

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Breaking Ground

1) Lay the foundation. After a site crew excavates the plot, you'll begin the work of laying the foundation. The type and design of the foundation will depend upon the size of your house, the ground in which it's laid, local building codes, and whether or not your home will have a basement. The most recommended and strongest type of foundation is concrete block. The excavation crew should first survey and stake the dimensions of the foundation and excavate it to the desired depth, then smooth it out to a workable surface, sometimes overlaying dirt or gravel to build upon.

2) Pour the concrete foundation on which to build. These are used to distribute the weight evenly and should be somewhat wider than the foundation walls, forming the perimeter of the home.

Build the form work and fill in with concrete. The form work is basically a mold for concrete, used to pour into and remove after the concrete has set. Alternatively, a block foundation can be laid which won't be removed, in which case you'll inlay rebar into the block and fill in the gaps in the block with concrete.

The thickness of the foundation should be determined carefully by a structural engineer, taking into consideration the height of the wall and the load it will be required to bear, both in terms of the building itself as well as the forces of gravity, wind, and earth that affect the structure.

3) Set up building lines. This means putting either batter boards or corner stakes at each corner of the house foundation to level and square up the foundation. Use a transit or building level to make sure the building lines are level and square, and check by measuring corner to corner, diagonally, to make sure the walls and corners are square.

4) Install your chosen type of floor. You may install a floor, called "slab on grade". Before pouring the slab floor, you need to make sure you've installed rough plumbing lines so that they are accurately placed. After the slab is poured, it'll be too late to adjust.

For a slab-on-grade floor, form up the footing and lay rebar. Generally, these floors are made on concrete block foundations. After installing your plumbing rough-ins, backfill around the foundation with dirt and gravel, compacting it appropriately. At this point, you may also want to pre-treat for termites and install moisture barrier.

For off-grade or above-grade floors, lay out and install wooden flooring piers and install your floor joist framing system to the proper specifications. Install subfloor/finish floor decking.

Building the Walls and Roof

1) Frame the walls of your house. You will need to lay out the wall lines on the floor, beginning at one corner, marking your bottom plate to attach to anchor bolts.

As you work, mark the location of doors, windows, and interior wall corners on the sill. Be sure to use special metal connectors/straps at the floor and tops of walls as required by code for storm and earthquake proofing.

2) Plumb the walls and brace them securely. Install sheathing if required. Otherwise, use sheet metal straps to diagonally brace all exterior wall corners. Make sure all studs are securely nailed in place, straight and square to the wall line.

3) Lay out the marks for setting your roof trusses. You may want to stick frame your roof, cutting and installing rafters and ceiling joists yourself (especially if you want a usable attic space). Prefab trusses, however, are engineered with lighter, smaller lumber for maximum strength. There are some trusses for attics with high-pitched roofs and dormers, as well as more traditional roofs. Research your options and choose something that works well for your home.

4) Set each truss in the correct location. Generally, this means 24 inches (61.0 cm) apart from one another, sometimes 16 inches (40.6 cm) for stick-bracing structures. Attach clips or other connectors to secure them, plumb the center of each truss, and temporarily support them with a rat run bracing near the peak.

Install diagonal gable bracing for a roof with gable ends to prevent the roof frame from leaning when you install the roof decking. For a hip roof, install king rafters and hip rafters, being careful to keep the adjacent plane of the roof consistent and straight

5) Nail a sub-fascia board to connect the ends of each rafter. Deck the trusses or rafters with plywood, oriented strand lumber, or nominal lumber such as 1 x 6 inch (2.5 cm x 15 cm) tongue groove boards.

In areas where high winds or snow loading is possible, make sure the roof decking is secured and structurally able to withstand these severe forces and conditions. Use appropriate bracing and fasteners for this scope of work.

6) Install roofing felt for use as a moisture barrier. To make sure the elements don't set you back as you're working, it's important to install a moisture barrier on your roof even before it's completed. Use 15 or 30 pound (6.8 or 13.8 kg) roofing felt tar paper and simplex nails, roofing tacks, or plastic capped felting tacks to secure it.

7) Install the exterior siding and exterior features such as windows and doors. Many locations require some type of metal flashing to prevent water from penetrating the edges and the gables, but you may be able to seal them sufficiently with caulking if it is permitted and you are able.

8) Install your final roof. You may choose painted sheet metal panels, rolled steel formed to lengths needed on site, or shingles, terra cotta tiles, or other materials, depending on your preference, costs, and products available at your location. Consider ridge vents, attic exhaust fans, vented dormers, and other architectural details which can increase the comfort of your house while decreasing cooling costs in hot climates.

9) Now your house is ready for interior works...