HOW-TO BOOKLET #3081

BOARD FENCES

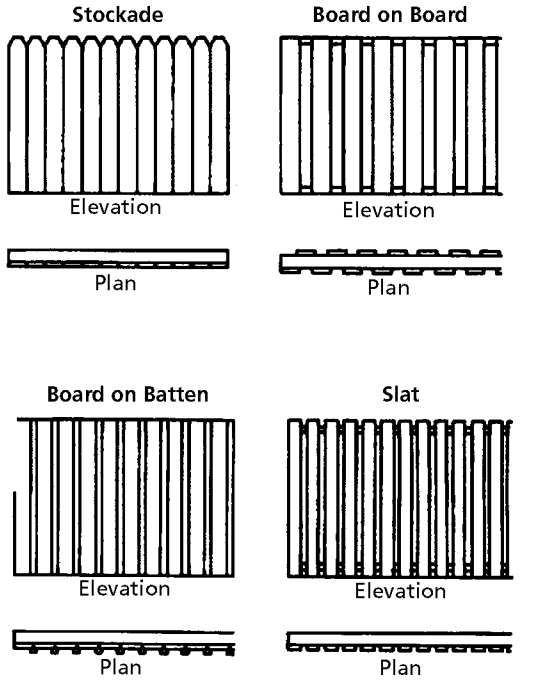
TOOL & MATERIAL CHECKLIST

- ❑ Fence Posts
- ❑ Post-hole Digger
- ❑ Cement Mix
- ❑ Saber Saw
- ❑ Fence Rails
- ❑ Line Level
- ❑ Water Bucket
- ❑ Paint or Stain and Finishing Tools
- ❑ Infill
- ❑ String
- ❑ Galvanized Nails

Read This Entire How-To Booklet for Specific Tools and Materials Not Noted in the Basics Listed Above.

Board fences are made up of boards nailed to a post/rail framework in various configurations and patterns. Building a board fence is within most do-it-yourselfer's skills, and by furnishing the labor yourself, the cost will be tolerable.

Fig. 1



These examples of various board fences may be just what you need.

CODES AND CONSTRUCTION

Before you buy fencing materials, check the building codes in your community. Special building permits may be needed. It's also a smart idea to consult your neighbors about your fence-building plans. The fence could, indirectly, infringe on their property, view, wind circulation, or lawn mowing.

Lay out the fence plan on a piece of graph paper, locating (approximately) the position of the posts and gates in the fence run. The layout will serve as a buying list and can save lots of time and money.

Fence posts, rails, boards, and hardware are standard items at most home center and building supply stores. You may find pre-fabricated types of board fencing in the store's inventory. As a rule, these materials are usually slightly less costly than the boards and lumber you would buy to build from scratch. However, check the quality of these ready-made components; some are better than others.

A board fence consists of posts, rails, infill (or boards), footings, and gates.

Posts. Posts are almost always wood 4X4s or 4X6s. If you use round posts, they should be 6" diameter. The posts usually are set 8' on center, that is, 8' apart. Because they are sunk in the ground, wood posts must be chemically treated to prevent decay. Cedar is an option because it naturally resists rot and repels insects. Bottom ends of posts should be treated with a wood preservative when they are cut. The post height depends on the height of the fence and the depth of the postholes.

A depth guideline:

5' fence	32"-36" posthole	8' post
6' fence	32"-36" posthole	9' post
8' fence	32"-36" posthole	11' post

Even fences 4' high or less should have posts sunk 3' deep. It's easier to work with square posts than round ones. If the board fence you are building comes preassembled and used round posts, be sure that the posts are pre-cut. This will reduce the difficulty of construction. The species of wood most often used for posts includes redwood, cedar, cypress, spruce, pine, or fir.

Rails. Rails span the posts horizontally. There are always two rails — sometimes three if the fence boards are heavy. There are several ways to attach rails to posts. The easiest way is with metal T-plates or fence brackets that are nailed into the posts.

Infill. The boards are the infill. The boards could be panels such as exterior-grade plywood (T1-11 is recommended for its grooved design), waferboard, or tempered hardboard, or pressure-treated boards of varying styles and sizes (**Fig. 1**).

Footing. These are the materials placed under and around posts to support them. You can set the post directly into the ground and support it with gravel or earth. Or, you can set the post into the hole and support the post with concrete. The concrete footing, as you would suspect, is the best in areas prone to extreme frost heave.

Gate. The maximum width is 48". The gate posts should be larger than the fence posts to support the movement of the gate. It is recommended that you use 4X6 posts. The posts for a gate should be placed in concrete for stability. We recommend at least three gate hinges—top, bottom, middle—and that they be extra hefty for support.

EXCAVATION

Building a board fence should follow a plan for best results. You will find that the job will go smoother.

1. Clear a line that the fence will pass through. At least 1 foot to either side of the line is sufficient. Any shrubs, bushes, trees, or stones that are in the line should be moved, or the fence should be designed to avoid them. You don't have to remove the ground cover. Make sure that buried power lines will not interfere with the posts. Your utility company can provide a site plan of buried lines. Check with them before you start digging.
2. Once the path has been established, you can position the posts. After you determine the spacing—6' or 8' on center—measure the distances and stake these points. Continue until you have staked all post centers. Keep in mind that the dimensions are taken from the center of each post to the center of the next post. Try to keep the units in even feet. This will avoid waste. Verify all dimensions twice before cutting. If you are installing a prefabricated fence, center-to-center distances may be 4', 6' or 8'. Measure, mark, and stake with care especially with pre-fab fencing. The spacing sometimes is not consistent.
3. Digging postholes can be the most difficult part of building any fence. The digger, which you can rent, can be the auger type or the clamshell type. Both types are work to operate; the auger type may be a bit easier than the clamshell. You can rent power post-hole diggers; you may need a helper to handle this equipment, however. The secret to a power digger is to hang onto the handles and let it dig. Don't force it. Let it do the work.

As each hole is dug, make sure that it is vertical. This is important when you set the posts. The depth of the posthole depends on the height of the fence, as detailed earlier. The diameter of the hole can vary from 10" to 12".

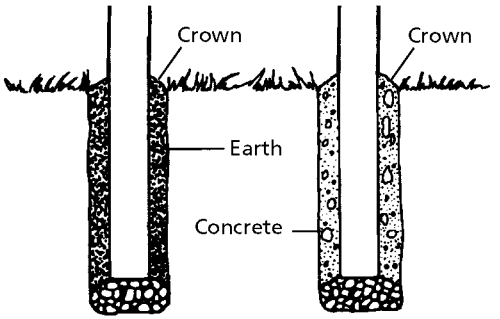
SETTING THE POSTS

After driving stakes in line with the post run, stretch a string down this run. Dig the end posthole first, set the post in this hole, align and plumb it with the string. If the fill will be earth, pack the earth taken out for the hole around the post until the hole is full. Tamp down the earth firmly (**Fig. 2**).

If you will set the posts in concrete, follow the technique below. One bag (80 lb.) of concrete mix is usually required per hole. It yields 2/3 cubic foot.

1. Throw a couple of handsful of gravel into the bottom of the hole.
2. Set the post in the hole.
3. Align the post and plumb it. Temporarily stake it plumb (**Fig. 3**).
4. Fill the hole about one-third full of cement mix.
5. Pour a 2-gallon bucket of water into the hole over the cement mix.

Fig. 2



Fill bottom of hole with several handsful of coarse gravel. This promotes drainage and deters wood rot. Crown fill or concrete at ground level so water will run away from the posts.

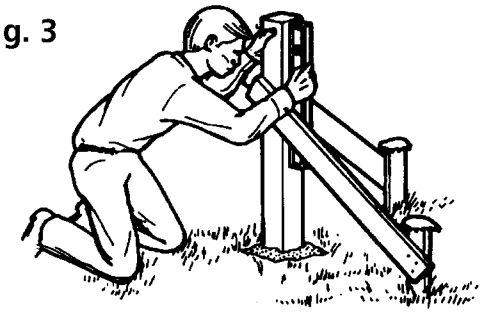
6. With a length of 1x 2 scrap, tamp or puddle the water into the cement mix. It doesn't have to be mixed as you would mix it in a tub or mixer. Just stir the water into the mix so it is damp.
7. Fill the hole another one-third with cement mix and then pour in the water and mix as you did before.
8. Fill the hole completely with cement mix, pour in the water, and puddle. Then trowel the top of the mix so it slopes from the post to the ground (**Fig. 4**).

   This method is easier than mixing the concrete and placing it in the hole. Once set, the post is so tight in the hole that it would take a tractor and chain to remove it from the footing.

   All posts will be set from this corner post. Dig the postholes as you come to them—don't pre-dig them unless you hire a pro for this job. If you hire a pro, you must be perfect with your measurements, or you may be in trouble with aligning and plumbing procedures.

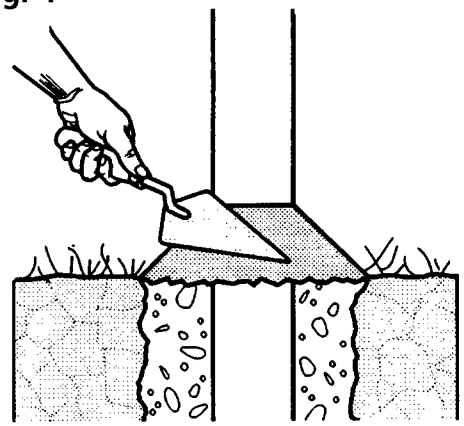
   Following the string and stakes, locate and dig the next posthole. Check all measurements twice, making sure that the posts are on the centers, i.e., 8' from the center of one post to the center of the next post. Dig the hole and set the post. Add the rails to each section (see details below). Then continue measuring, marking, aligning, plumbing, and setting the remaining posts.

Fig. 3



Plumb each post on two sides. Then hold with temporary stakes until post is set in the hole. Always set one post at a time, and finish the fence section between posts before your continue.

Fig. 4

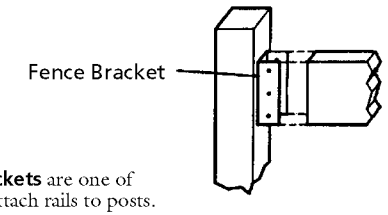


Slope the concrete collar away from the post to prevent rainwater from collecting.

ATTACHING THE RAILS AND BOARDS

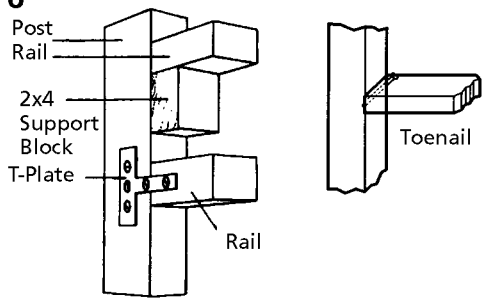
1. The top rail can be set flush with the top of the posts or dropped several inches below them, depending on the fence style. Nail the top rail inside, outside, or within the frame. Toenailing, or driving the nails at an angle, is the recommended nailing method. You can also use galvanized hardware such as fence brackets or T-plates rather than simply attaching the rails with nails. Support blocks are also helpful (**Figs. 5 and 6**).
2. Secure the middle (if required) and bottom rails in the same way. For shorter fences, you might want only top and bottom rails.
3. If fencing along sloped terrain, either lay out the fence in steps or follow the natural contours of the land (**Fig. 7**). In general, fences on short, steep slopes look better when stepped; if the fence follows the slope, it appears to bulge or lean. Longer or gentler slopes can be followed.
4. The installation of the boards on the framework is the easiest part. Do not nail on the boards until the final framework pleases you. When you are ready to nail on the boards, start at either end of the fence and set the first one in place. Be sure it is vertical; use a plumb bob and line to check it.
5. Boards should not overlap the top or bottom rail by more than a few inches; unsupported boards will warp and cause a ragged-looking edge.
6. For a privacy fence, butt the boards side by side. If they are not being butted against each other, use a piece of wood the same width as the boards for spacing. Nail a cleat to the top of the piece and hang it on the top rail (**Fig. 8**).
7. After the boards are on, cut the tops of the posts to match. If the top rail is nailed directly on top of the posts, the posts must be aligned, measured, and cut as the rails are installed.
8. Using string and a line level, establish a cutting guideline from the corner post to another corner or gate post. The posts, if not covered by rails, can be topped off with a metal cap to help protect the wood from rot. The caps slip over the post and are nailed with aluminum nails. Or you can use decorative post caps.

Fig. 5



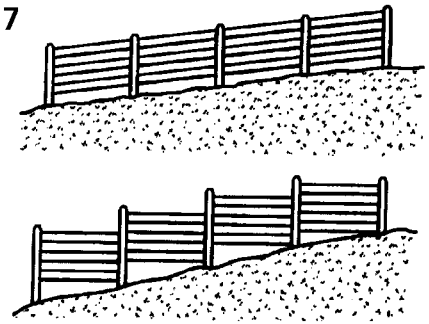
Metal fence brackets are one of the best ways to attach rails to posts.

Fig. 6



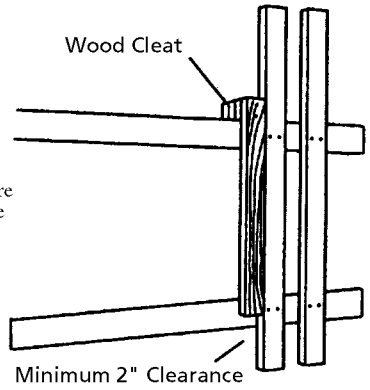
Rails for a board fence may be supported by a block of wood nailed to the post or with a metal T-plate. If you use the latter technique, toenail the rails to the posts for more support.

Fig. 7



On gentle slopes, the fence follows the slope. On steep slopes, the fence is stepped accordingly.

Fig. 8



Use a spacer to ensure uniform spacing of the fence boards.

GATE CONSTRUCTION

Gates (**Fig. 9**) should be installed as you come to them. Leave about 1/2" clearance between the post and the gate frame. Also leave about 3" of space at the bottom of the gate so the gate will swing free and easy. For building purposes, consider the gate and the post on which it swings as a single unit.

The gate frame is a rectangle of 2X4s butt joined and screwed or nailed together. We recommend a diagonal length of 2X4 between the top of the frame and the bottom of the frame. This diagonal piece helps stabilize and strengthen the gate. Always attach the lower end of the diagonal on the hinge side of the gate; reversing it will cause the gate to sag.

Once the frame has been assembled, hang the gate using three very strong strap hinges. The center hinge is centered between the top and bottom hinge. Make sure the gate swings freely. Then add the boards to the gate rails to match the spacing and alignment of the boards on the fence.

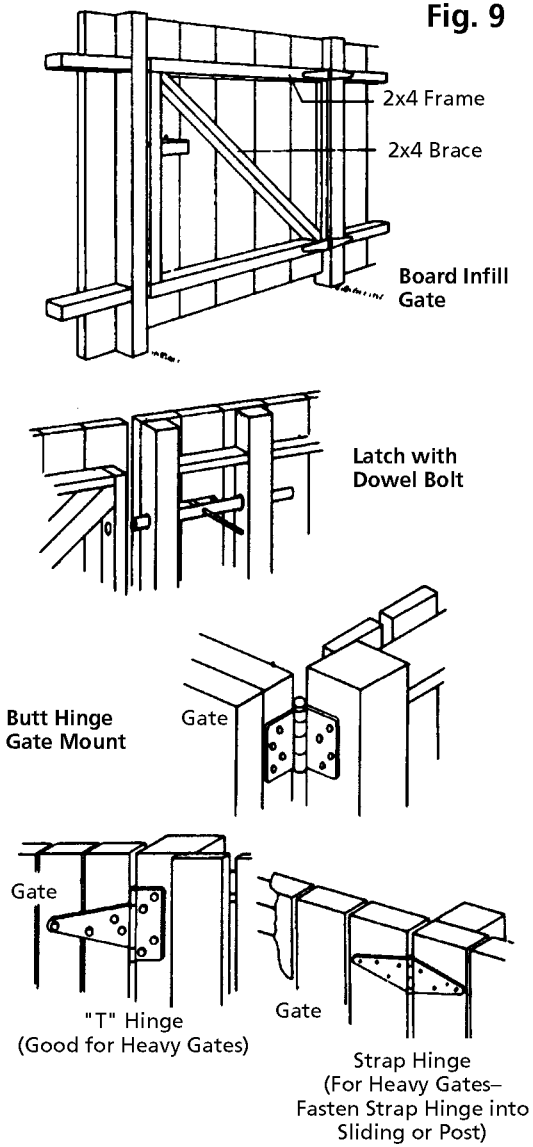
FINISHING

Finish the board fence if you want, with any good exterior house paint. Use a primer and at least one top coat. Two top coats are best.

You may want to prime the infill boards before nailing them in place. You will, of course, mar the primed surface during assembly. However, the damage to the primer shouldn't be all that much if you work carefully. Laying the boards out on sawhorses and coating them—faces, edges, and ends—with primer assures better coverage than you could achieve with the boards on the fence.

Once the boards are in place, you can apply the finish coats of paint to the fence.

Fig. 9



Use a spacer to ensure uniform spacing of the fence boards.