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JANUARY 1989

# Wooden Fence Construction

## Creating A Landscape Asset

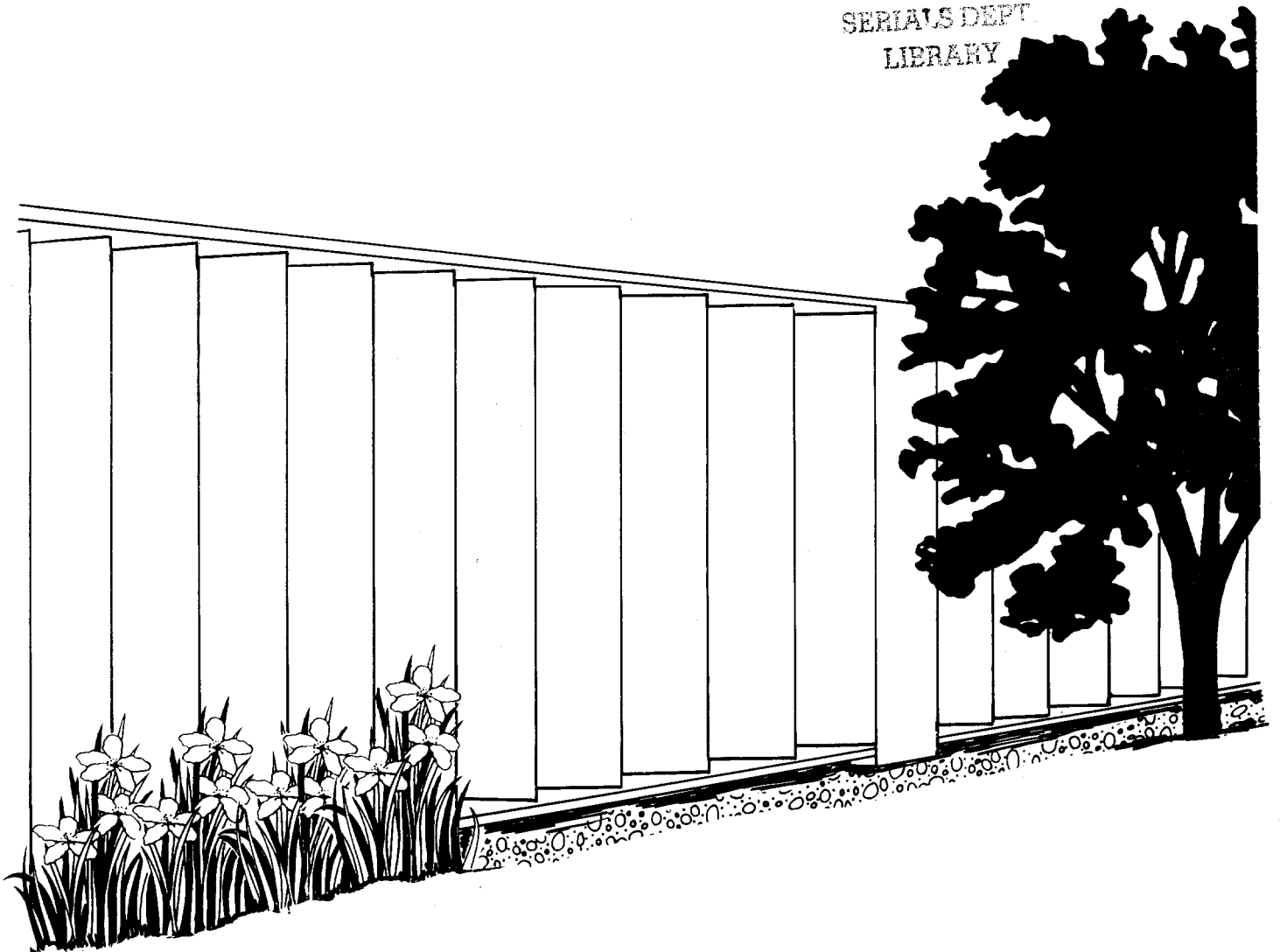
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NORTH DAKOTA  
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Early settlers found a vast supply of wood upon arriving on the American continent. Coming from timber-short Europe, they used wood for virtually every building purpose imaginable: ships, homes, barns, schoolhouses, bridges, factories and fences.

The poet Robert Frost wrote, "Good fences make good neighbors." Abraham Lincoln got his start supplying fence rails, and Tom Sawyer conned his friends into painting his Aunt Polly's fence. Today, wood fences are increasingly popular with the homeowner to mark boundaries, protect a swimming pool or provide privacy. A well-designed and installed wood fence becomes a positive landscape asset, providing an attractive picture frame for a home or property.

Fences come in all sizes and heights, and most require only the basic carpentry skills to construct. However, before installing a wooden fence, check with the local building code office; there may be height and/or construction limitations. If the fence is going to be put along a property line, don't guess! It is worth the investment of a few dollars to get an accurate survey of the property; opinions between neighbors do not count should a court battle result. Speaking of neighbors, if a property-line fence is being considered, talk it over with your neighbor to review what is planned and see if a possible cost division can be established.

## Wood Selections and Posts:

For competitive and aesthetic reasons, most wood used in fence construction is cedar. In some cases, the wood may be a pressure-treated pine. In this case, the wood is pressure-treated with a reg-

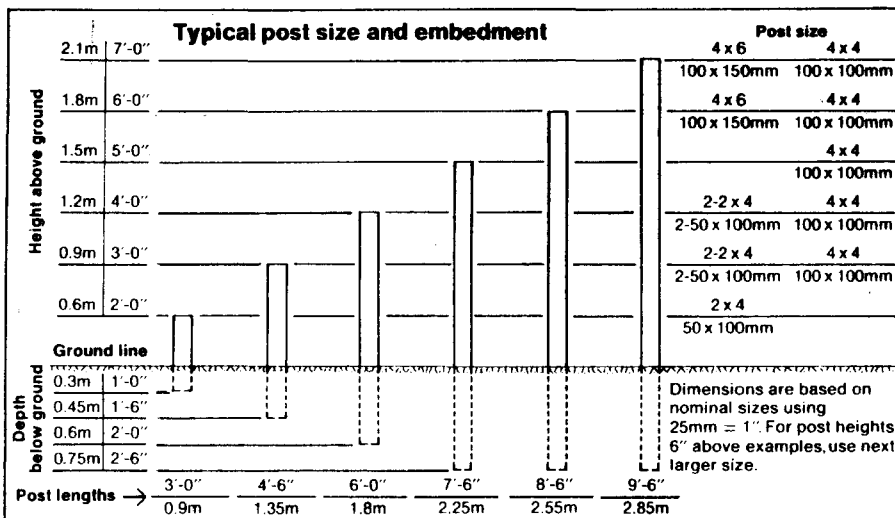
istered wood preservative to give it longer life. This treatment costs extra, of course, but may not result in a fence that would stand up to the elements any better. Other wood that is often used in fence construction is redwood and cypress, but these may be more expensive and difficult to obtain.

The posts, which are in contact with the ground, should be pressure treated with a preservative. Brushing or dipping the posts into a preservative does not give satisfactory protection and may be considered an illegal use of a pesticide. Other fence components can be treated with a legal brush-on preservative before painting or, if staining, treated with an added preservative to the stain. Rot starts in joints where boards are fastened to framing, so take special care to treat these areas before the fence is built.

Posts are usually 4x4's up to 8 feet apart. If, however, the fence is going to be higher than the standard 6 feet, or is subject to high winds, then 6x6 posts would be a better investment. A good rule of thumb is for the post to be buried 2.5 feet into the ground. With most posts being 8 feet long, the post available for nailing stringers and other members is about 5.5 feet. To allow for the moisture to run off, bevel the tops of the posts in some manner (see figure 1).

Make sure all hardware, including nails, screws, gate hinges and straps are of stainless steel, aluminum alloy or hot-dipped galvanized steel. For maximum holding power, use annular or spiral-shank nails. To reduce splitting, pre-drill a pilot hole about three-quarters the diameter of the nail. For dense or brittle wood, grind sharpness from nails or blunt the points by striking them carefully with a hammer. Blunt nails cut through; sharp ones pry apart.

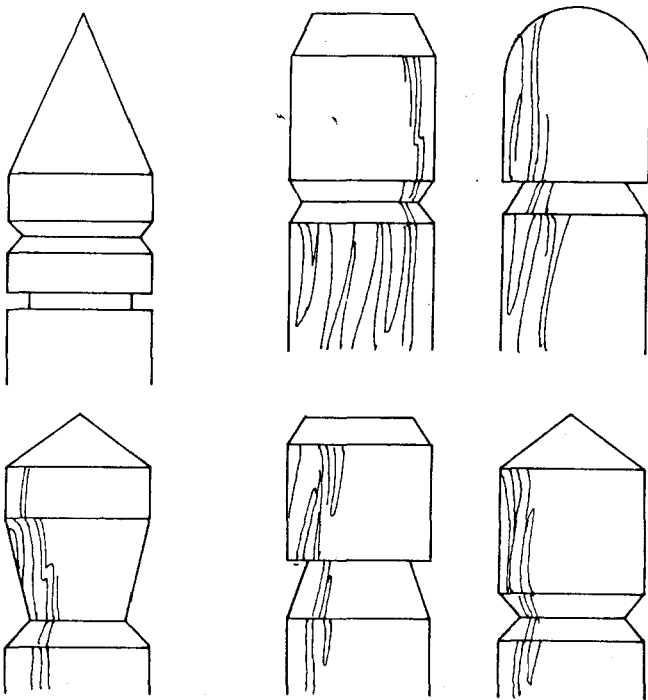
Figure 1



## Fence Posts

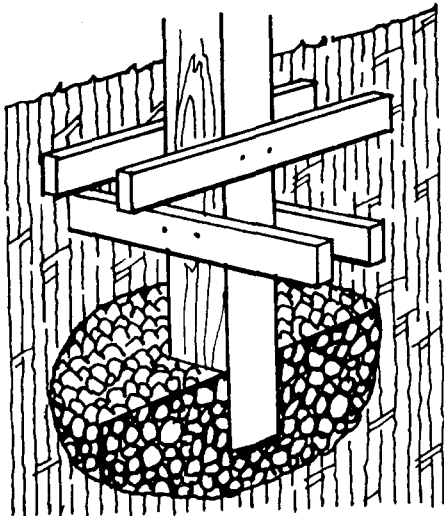
4x4's are normally sufficient for fence posts; if, however, your fence is extra high, or subjected to high winds, you may need 6x6 posts. A good rule of thumb is that the part of the post being buried in the ground should be one-third the height of the post above the ground. Thus, a post for a fence six feet high should be eight feet long.

The tops of the posts should be beveled at a 30° to 40° angle or pointed to allow precipitation to run off.



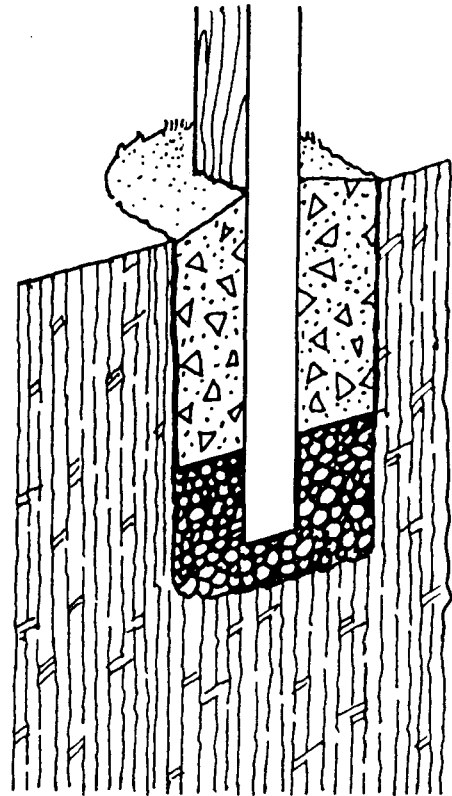
**Fence Post Top Designs.** May also be used as picket top designs.

Posts can be set in gravel or concrete, set on concrete and braced with strap iron, or simply stabilized in the ground by digging a hole big enough to have cross-cleats of 2x4s below ground (see figure 2).



**Figure 2. Cross Cleat Setting for Gate Posts**

Setting posts in concrete is a popular option as it provides the greatest stability and longevity. Be sure the top of the concrete is sloped away from the post to provide good drainage, and that the bottom of the post does not have concrete placed under it (see figure 3). This would be a site for water to collect and accelerate wood rot.



**Figure 3. Concrete Setting**

Gravel-set posts should be provided with 6 inches of gravel beneath the bottom of the post to provide for good drainage. In all cases, make sure the posts are absolutely straight by using a carpenter's level and then bracing them temporarily for support until they are permanently set. Nothing will detract from a fence quicker than a post which is out of vertical or not level (see figure 4).

The horizontal supports (stringers) for most fences are 2x4. Use three supports in solid fences 6 feet or higher. The third rail gives added stability and nailing surface. Stringers should be considered carefully, as overloaded 2x4s are a very common cause of fence failure or sag. When in doubt, three are always better than two, and the method of attachment is very important. While nailing may be expeditious and appear to be satisfactory, in time nails may loosen or pull out as they are exposed to the weather. Use either a counter sunk

carriage bolt for attachment or a steel angle bracket to attach to the posts. If nailing is still the preferred option, then use annular or spiral-shaped nails for maximum holding power.

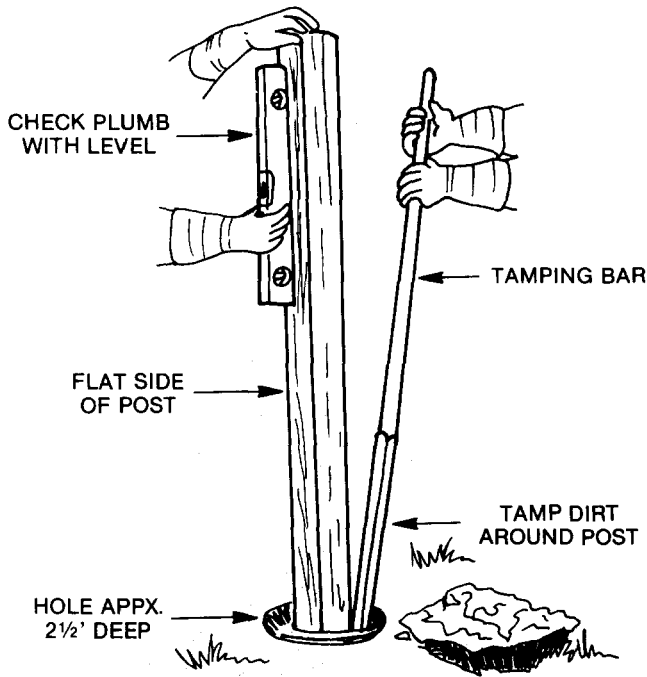


Figure 4

## Design or Fence Facing Detail.

Fences have many purposes, but most are installed for privacy or some degree of security in a hopefully aesthetic manner. One of the best fence styles to meet these criteria is the board-on-board or alternate board style. In addition to aesthetic features, this style allows the air to pass through, spreading out snow drifts for faster melting. The real bonus of this fence is that it looks great from both sides. A solid, stockade-type fence may offer a little more privacy and security, but it provides the greatest wind resistance, causes deep snow drifts to form, looks good from only one side and is usually quickest to deteriorate. Also, heat zones can build up on south or west exposures which can prove lethal to some plants, or at least accelerate plant desiccation (see figures 5 and 6).

Allow the imagination to run free in selecting a design - virtually anything can be done, which is a major advantage of working with wood (see figure 7).

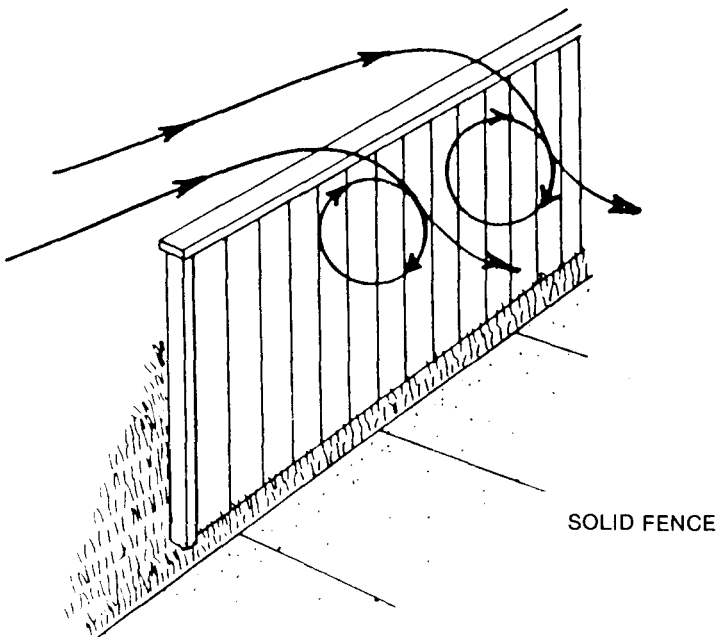


Figure 5. A solid fence will cause more snow to drift and could create a microclimate lethal to plant life.

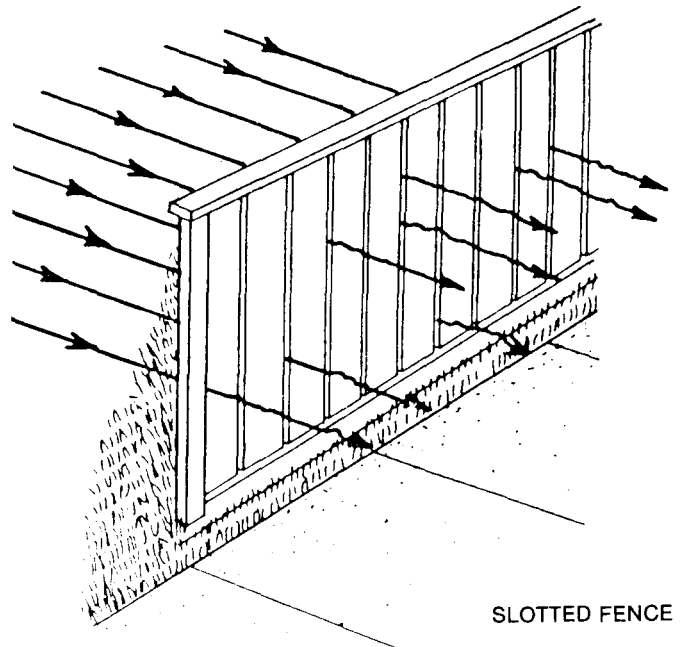
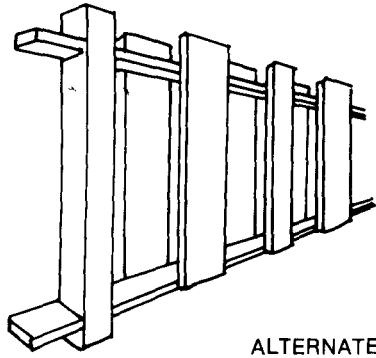
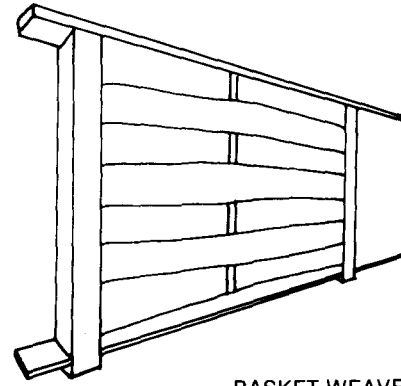


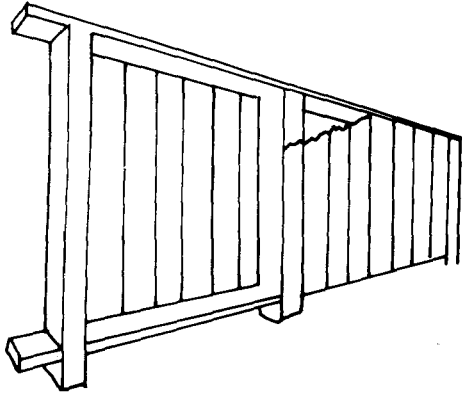
Figure 6. A slotted or board-on-board fence will distribute the snow better and create a more moderate microclimate for plant growth and human comfort.



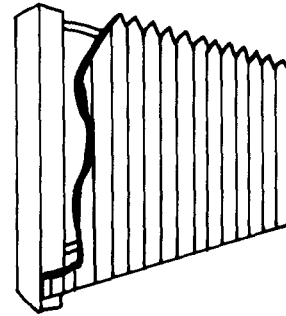
ALTERNATE WIDTHS



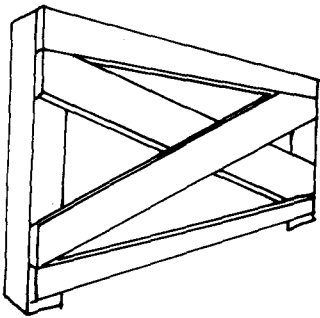
BASKET WEAVE



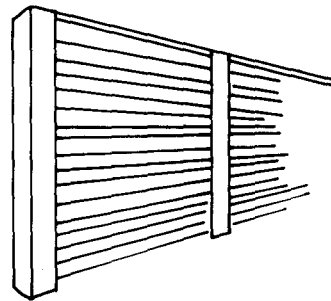
ALTERNATE PANELS



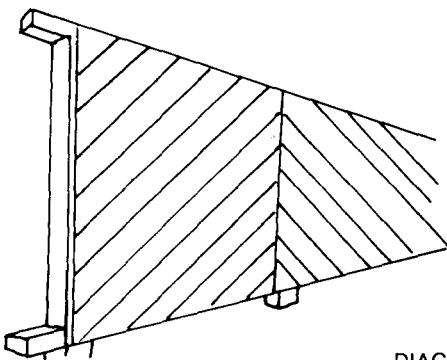
REDWOOD SPINES



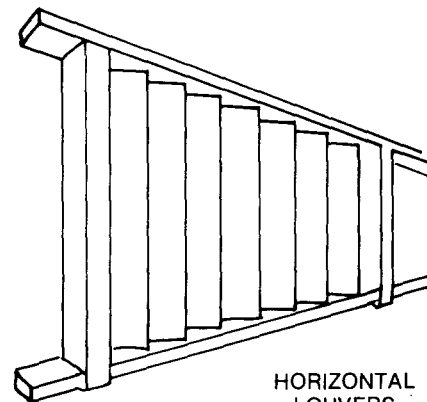
POST AND RAIL



LOUVERS



DIAGONAL PATTERN



HORIZONTAL LOUVERS

Figure 7. Some wood fence styles.

# Gates, Hinges and Latches:

Since gates will be getting the most wear and tear, their construction should be especially sturdy. Here, the posts should be 6x6 set in concrete and assembled with screws rather than nails for greater strength. The minimum width for gates is 3 feet, with 4 feet being preferred. The larger opening allows for the easy movement of small garden and construction equipment. Like fence panels, gates are usually a matter of design preference.

Every successful gate is a result of two factors: the frame construction and the type of hinges used to hang the gate. There are any number of hinges available, but the hinge must be matched to the weight of the gate. As a rule, gates should be supported by at least three hinges, particularly if there is a chance that any excess load will be put on the gate. Small children are one of the most common excess loads. Soft metal hinges should be avoided. Kingpin and flat hinges made of heavy duty, hot dipped galvanized steel are commonly used and are bolted to the gate rather than nailed (see figure 8).

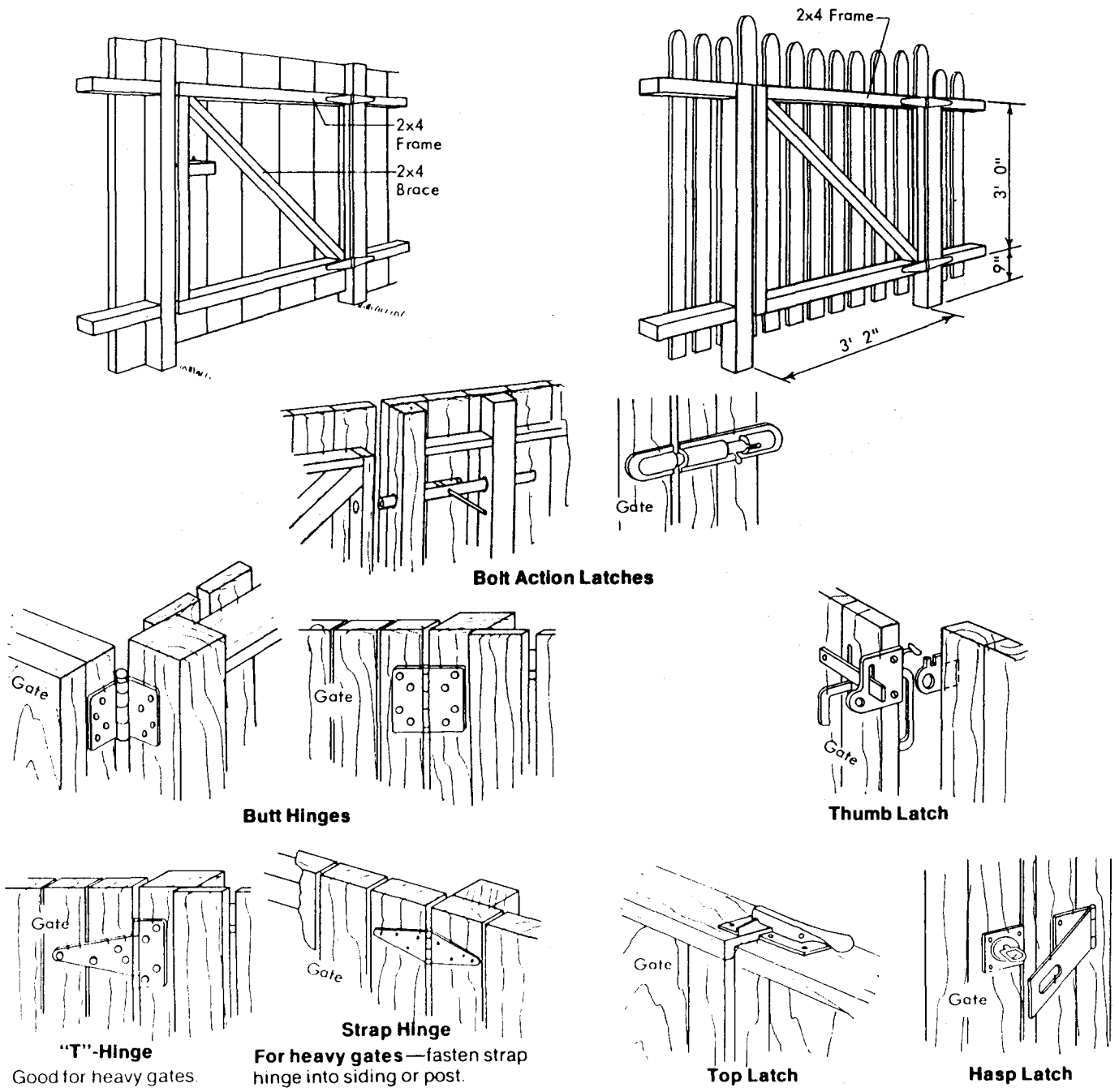


Figure 8. Gate construction.

## Finishing the Fence and Complementary Landscaping:

Many people prefer to allow their wood fences to weather naturally. Most pressure treated wood will weather to a pleasing gray color. If you wish to paint or stain the fence, be sure the wood is dry before any type of finish is applied. If a paint is to be applied, be sure to cover with a good wood primer first, then paint with a good grade of outdoor house paint, either oil or latex based. Once done, repainting will be required every three to five years depending on exposure and weather conditions.

If staining is preferred, there are three basic types:

- **Penetrating Stain** - These are usually oil based and are transparent, highlighting the wood grain in the fence. They also mellow with age if a protecting top coat is not applied.

- **Latex Stain** - These are water based, making clean-up much easier. They are semi-transparent and will mask some of the wood grain. Latex stains do not penetrate wood as deeply as a pene-

trating stain, and they too will mellow with age if no protective coating is applied.

- **Varnish Based Stains** - These stains combine a penetrating stain with varnish for protection; they are available in both gloss and semi-gloss finish.

Wood fences open a vista of opportunities for landscape ideas. They do create a microclimate for growing plants that might have been too tender for the location. In some cases, fences can provide protection from the extremes of sun or wind allowing for the installation of small fountains or reflecting pools. Seasonal color, from spring bulbs to hardy perennials, will add interest to any fencing scheme or pattern. Many determined fruit growers like to practice the art of espalier growing of apples, pears and cherries along the facade of a fence. One is only limited by imagination. For design ideas and principles, refer to NDSU Extension Circular Number H-958, "Landscape Ideas for North Dakota Homeowners."

If all of this seems like more work than it is worth, professional fence installers will provide an estimate for the wooden fence of your dreams.

*Appreciation is extended to Fargo Fence's Erik Sjue for his assistance in reviewing this manuscript.*

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