

This report covers repairs, restoration, installation and maintenance for columns up to ten feet tall. Architectural columns are made up of several elements which work together to provide massive visual and structural support for the entablature and roof framework. The main shaft is often supported by a round base and square plinth. The capital above terminates the column visually and serves to spread and even out the structural load taken from the span above. (Fig. 1)

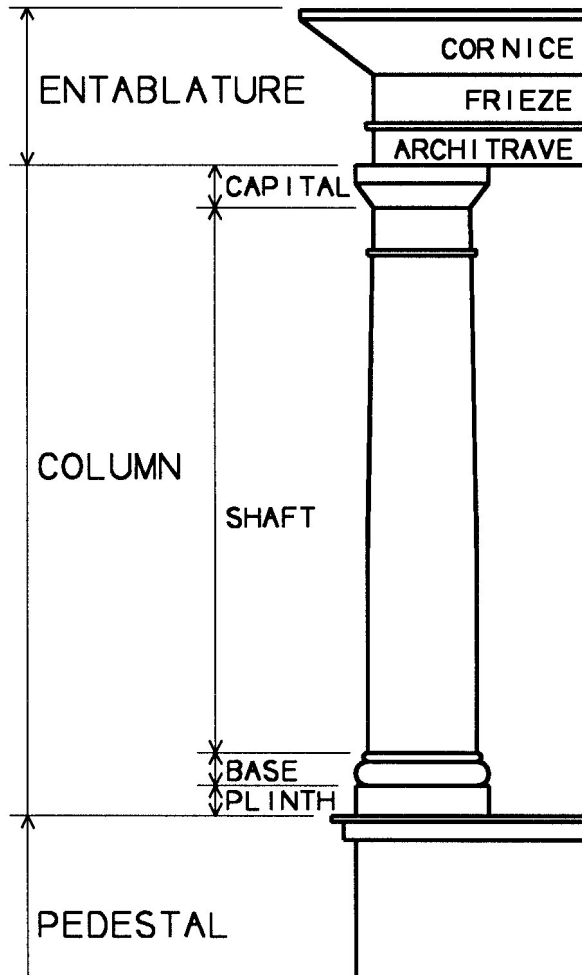


Fig. 1. Parts of a column.

Types of Columns

It is important to understand how columns are built in order to make successful repairs on them. The major difference between the five types is in the way the rough blank for the main shaft is fabricated. (Fig. 2)

Construction of Shafts

Solid shafts are made of the whole, solid trunk of a tree with the heart of the tree down the center of the shaft. This type of column almost always develops large checks, or cracks, because the wood shrinks

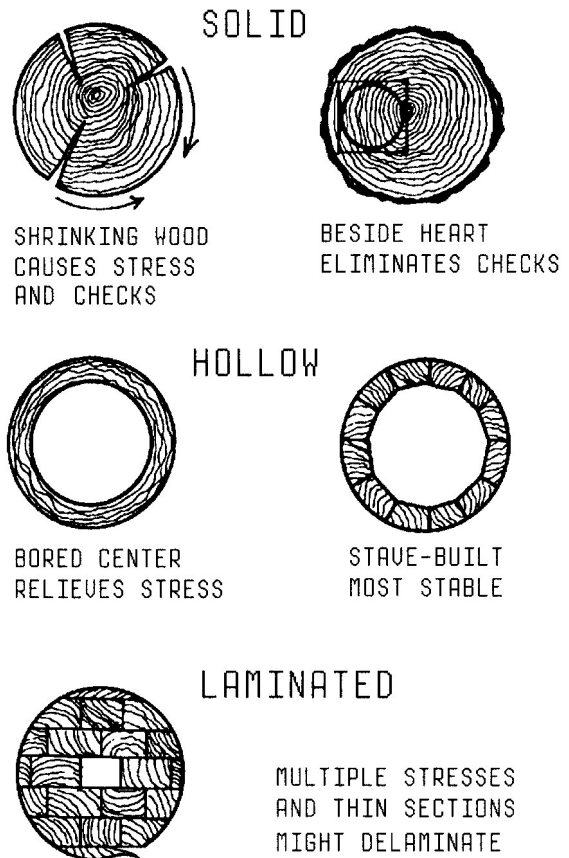


Fig. 2. Types of column shaft construction.

around the perimeter as it dries. This is the same type of check commonly seen in large timbers cut from a whole log.

Solid blanks were sometimes cut "beside the heart" of a log. As it dries, the wood shrinks across the diameter of the shaft and is less likely to check. Shafts up to six or eight inches in diameter were made this way, and smaller diameter porch posts still are.

With a hollow-bored shaft the center of the blank has been bored out, allowing the wood to shrink without the stress that causes major checks. (Fig. 3)



Fig. 3. One half of a hollow-bored column shaft.

check and some of the slat should be left standing above the surface.

After the glue has set, trim off the excess glue and slat. Use this method only near the end of the dry season in your area when the checks are widest. This is a long lasting method that is especially useful for checks wider than 1/4".

Never try to close a check by any method of clamping. It is impossible to close checks on solid shafts and you may crack hollow-bored columns.

Regluing a Shaft

A staved column with loose joints can be repaired using the following method. Lay the column across a couple of sawhorses. If more than one joint is open the column might fall apart. Make a couple of cradles with an inside radius just larger than the column to hold the column together. (Fig. 14) Clean all caulking, old paint and glue off both sides of all loose joints. Scrape down to bare wood but take care not to damage the joint. Use weather-proof glue and heavy band clamps if using resorcinol adhesive. Light weight web clamps that operate on a ratchet with a small wrench are adequate if using epoxy adhesive. Plan to glue one joint at a time until two are left, as nearly opposite each other as possible. They will both be glued at the same time to form the complete shaft.

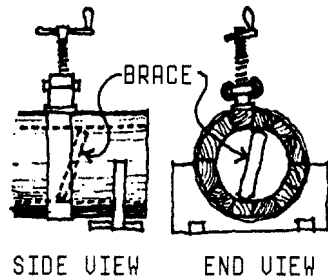


Fig. 14. Gluing and clamping a joint. Side view showing brace wedged inside shaft. Effective length of brace can be changed by shifting the angle of the brace more or less. End view of staved shaft in cradle. Brace is holding the shaft from going out of round due to pressure from clamp.

Gluing and clamping is best done with two people. Always rehearse gluing and clamping procedures by actually putting the pieces together and clamping them up tight. You have to be sure you can get everything together before the glue begins to set up.

Spread glue on each side of the joint, assemble the staves into the cradle and lay wax paper over the joint to protect the canvas bands. Loop the band clamps over an end of the shaft and tighten just enough to hold them in position, with the clamp heads directly over the joint. Then tighten each clamp a little in succession up and down the joint until there is enough pressure to squeeze excess glue out of the joint.

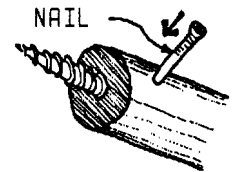
Check the shaft to be sure it is still round with templates made to fit the circumference near both ends and at the middle. If the shaft is slightly oval, loosen the clamps a bit and insert internal braces that will hold it round. (Fig. 15) Retighten, then check again for roundness.

Allow enough time for a full strength cure, usually one or two days. This is necessary because the joint will be put under heavy stress when the next joint is glued up. When taking the clamps off, loosen each a little at a time. Use a clamp every twelve inches. Clamps cost \$40 each but the expense could be justified if you reglue two or three columns. You may find band clamps at a local tool rental store. If you glue only one joint be certain that there is enough flexibility in the shaft to

allow the joint to close without breaking another joint or splitting a stave. If you can close the joint completely by hand, it is flexible enough.

If the surfaces beside the joint do not line up use the following method.

First make a "screw-stick" out of an old broom handle. Cut the end off square and twist the threaded part of a #12 or #14 steel wood screw into a predrilled hole using a pair of pliers. Try not to mash up the threads too much. Then lock the screw in position by drilling a hole through the stick and wood screw and driving in a thin finish nail.



Cut some pine blocks that have two surfaces that are at the same angle as the flat inside surfaces of the staves. (Fig. 15) Clean the joint in preparation for gluing. Drill 3/16" countersunk holes about 7/8" from the edge of the joint in the stave that is higher. Use #10 wood screws.

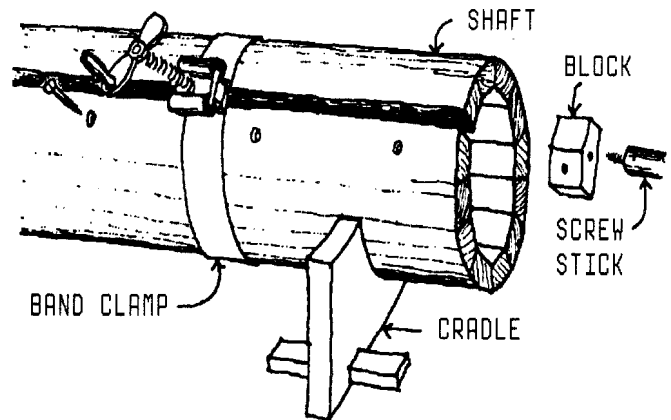


Fig. 15. Aligning a joint with blocks.

Start with the block near the middle of the joint and hold it in position behind the joint with a screw-stick. (Fig. 16) As it is screwed to the high stave, the lower stave will be brought up level with it. (Fig. 17) Unscrew the screw-stick and fasten in the next block. When all blocks are in place the surface of the staves should be even and you can proceed to glue the joint using band clamps.

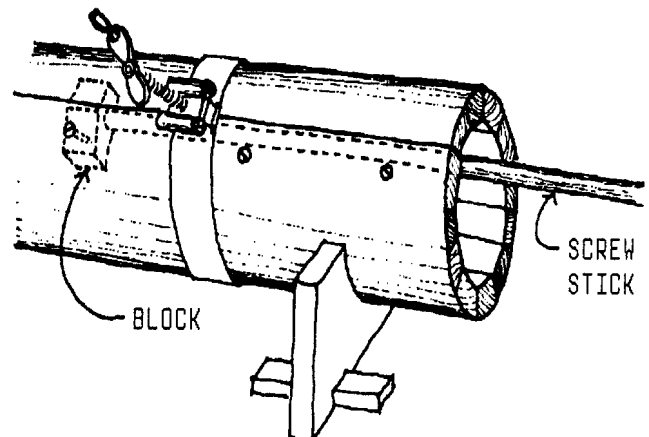


Fig. 16. Using screw-stick to place block.