A Stretcher Cross-Bar Modification

During a recent treatment it was necessary to gain access to the reverse of a tear hiding behind a cross-bar. In this case the stretcher was keyable but the cross-members were solidly attached to the stretcher rendering it non-expandable.

The process of gaining access to the reverse of the tear led to the method of modifying the cross-bar to make it expandable, as presented in the photos.

The technique will work on any cross-member that can be removed by cutting through the cross-bar. In this case, the cross-bar was held in place with nails "toed" through the cross-bar and into the stretcher. It would also work for cross-members nailed in place through the stretcher/strainer and into the end grain of the cross-bar.

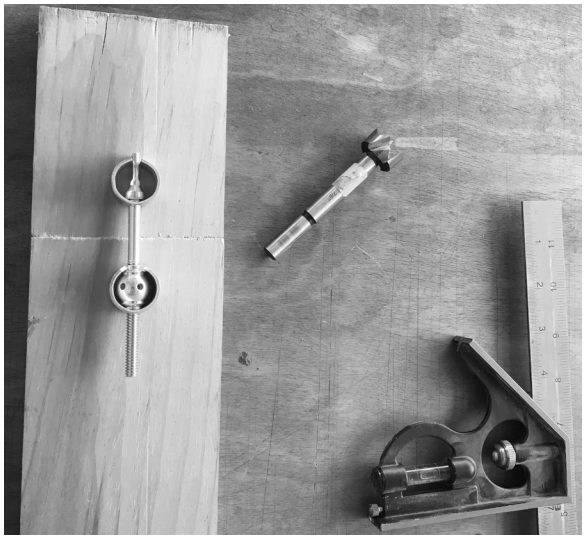
Not shown in the photographs is the initial removal of the cross-bar. Protective material was placed on the reverse of the face-down painting below where the cross-bar was to be cut. A back saw was used to cut through the bar, and the sawdust was vacuumed from the protective material.

The screw securing the cross-members together at the crossing was removed, and the two sections of the cross-bar were removed by working them off of the nails holding them to the stretcher.

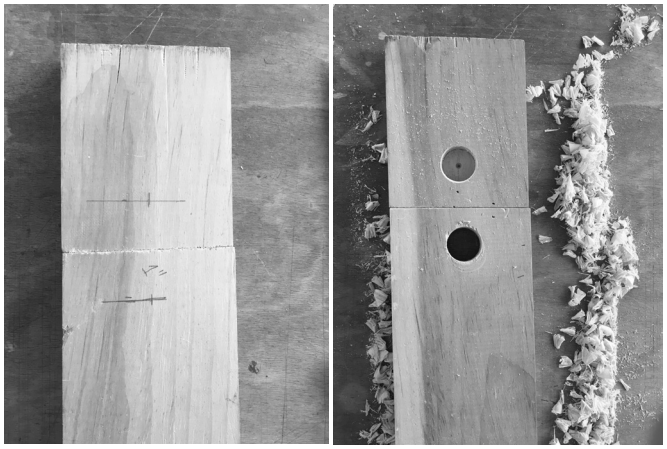
The hardware used for expansion bolt stretchers seemed to be the best system. (Of course, the hardware is not called an "expansion bolt" but rather a "tite joint fastener." Figuring this out took more time and effort than the actual cross-bar modification.)

Laying out the tite joint fastener across the cut in the cross-bar. Note the 7/8" Forstner drill bit and square to the side. It is worth noting that there is special hardware available – a special drill bit that prevents drilling too deeply and a drill guide that assures perfect alignment of the holes. (See for example: www.rockler.com/tite-joint-fastener.)

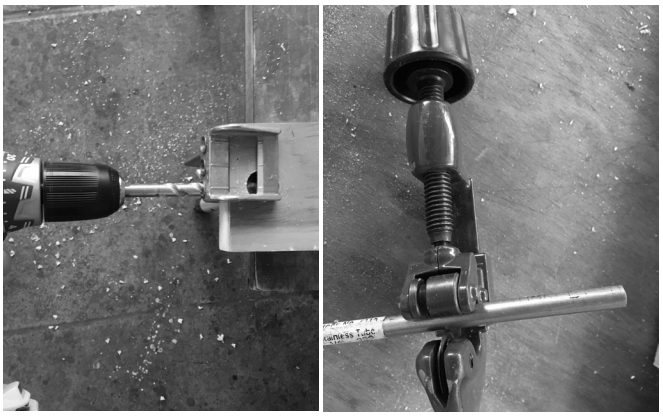
Marking the location of the holes for the tite joint.



Drilling the two vertical holes – note that one went too deep and through the cross-bar.

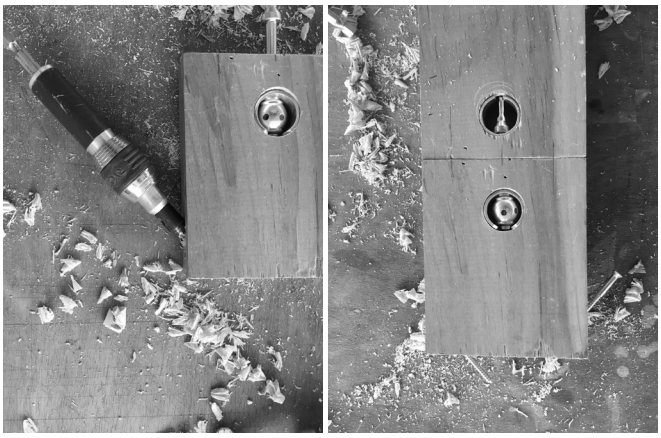


Drilling the horizontal hole for the tite joint connecting hardware. Two 1/4" holes were also drilled, one on each side of the connecting harddware. These allowed for the insertion of stabilizing pins cut with a pipe cutter from 1/4" stainlesss steel tubing.

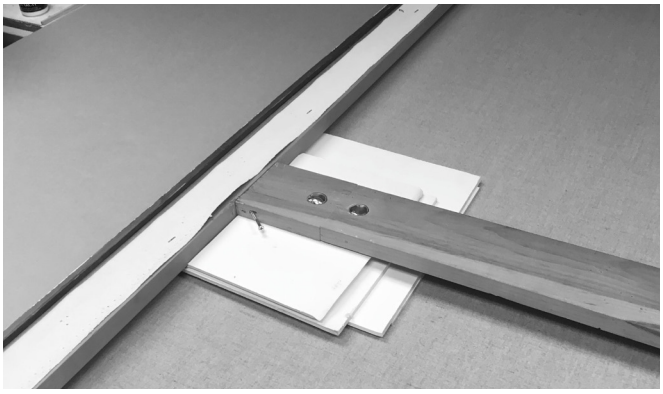


Pilot holes were drilled for #6 2 ½" long screws to toe into the stretcher when the cross-bar is reinserted.

The finished end of the modified cross-bar.



Installing the now-expandable cross-bar into the stretcher. Shims were used to hold the cross-bar at the correct height while screwing in the toed screws.

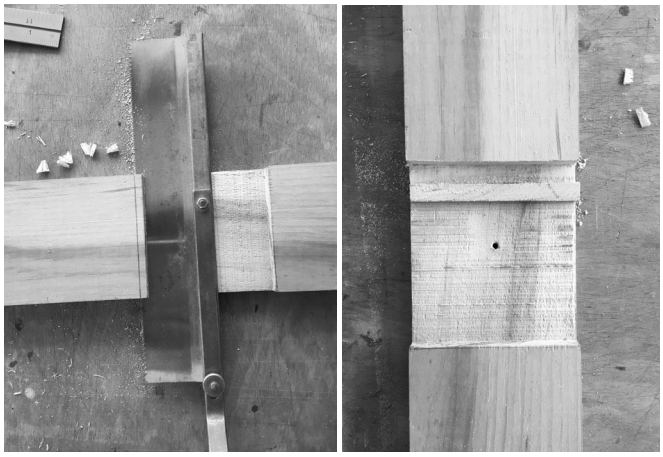


The other end of the cross-bar secured into place.

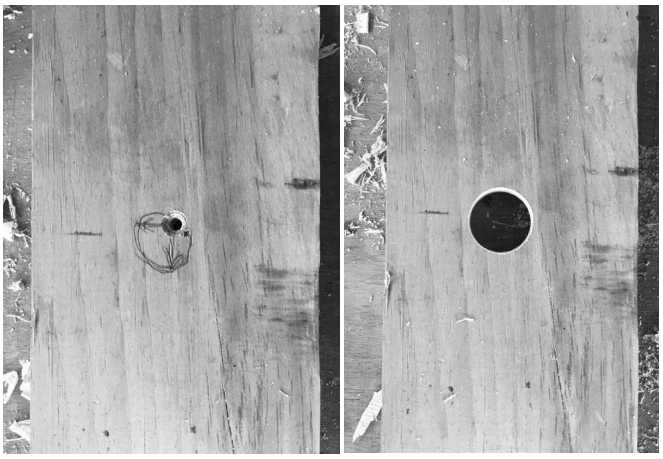
One could also add a second tite joint fastener to the other end of the cross-bar so each side could be expanded independently.

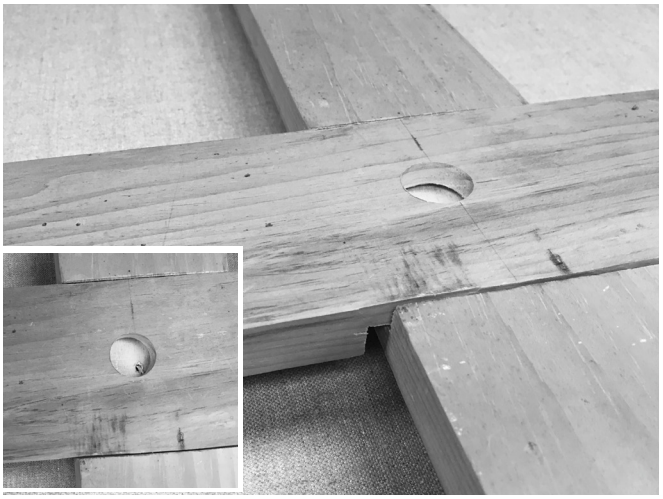
It was also necessary to modify the attachment of the two crossbars, to allow them to move when the painting was keyed out.

The first step was to widen the half-lap join at the crossing.

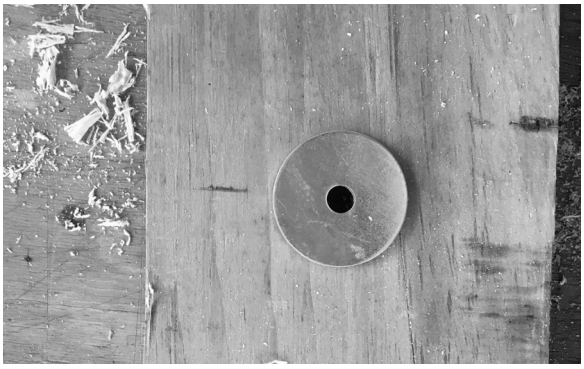


Next, the hole where a screw holds the two crossbars together was enlarged, so the two could move independently.





And finally, a large fender washer was placed over the hole. A screw will hold the crossbars together securely, but loosely enough for them to move.



With the wisdom of hindsight: it's worth getting the special drill bit and guide for installing tite joint fasteners.

This technique can, of course, be used to modify both ends of all crossbars on a painting.