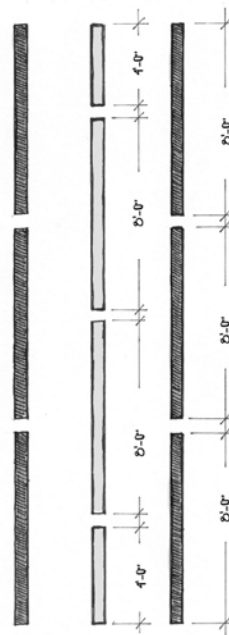


How Do You MAKE ...

STIFFENERS

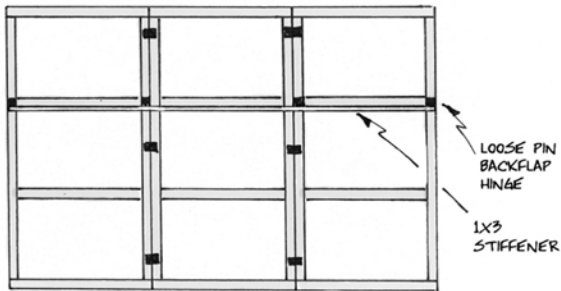
Stiffeners are often used in conjunction with L-jacks to provide a wall bracing system. The function of a stiffener is to improve rigidity in general and to keep various sections of scenery on the same plane. Stiffeners are not just for walls made of flats, but this type of construction does provide a good example of the principles involved.



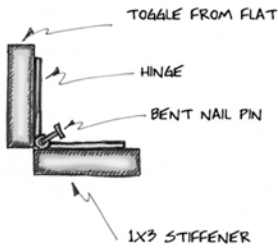
END VIEW

LAMINATED PLYWOOD
STIFFENER PARTS

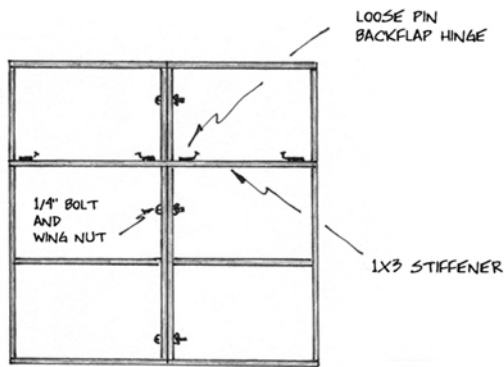
Stiffeners are most often wooden and can be as simple as a single length of 1×3 or 1×4 . Sometimes a long wooden stiffener is laminated together from several layers of plywood. This creates a very stable structure. As with any laminated product, be sure to offset the joints and use enough glue to ensure the necessary strength.



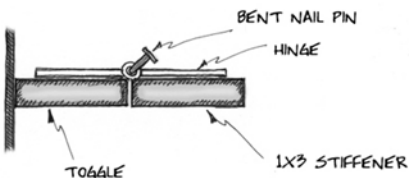
SOFT-COVERED FLAT STIFFENER



When hinging a stiffener to a group of flats, placement of the hinges is very important. There should be a hinge at the extreme ends and at every joint between the flats. On a soft-covered flat, the framing allows for easy connection to the stiles. On a hard-covered flat, that won't work, and it is better to hinge to the tops of the toggles, or perhaps the top rail.

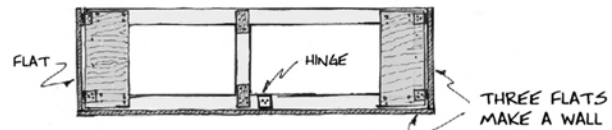
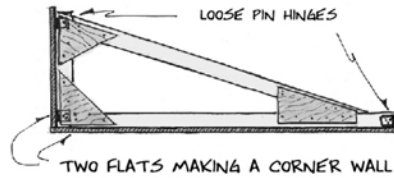


HARD-COVERED FLAT STIFFENER



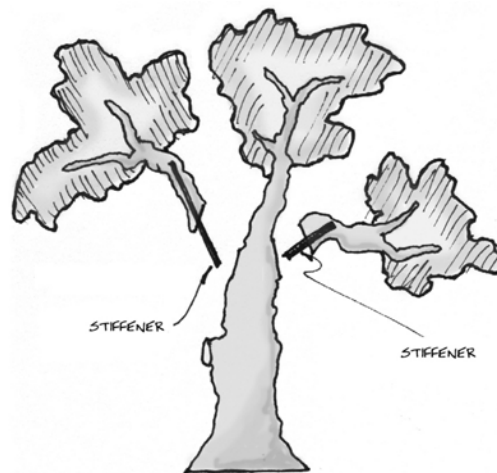
Always locate the hinges on the top of the stiffener so that it does not tend to "flop down" when the scenery is elevated. The piece of 1 x 3 has much more rigidity when it is sticking straight out from the back. To experience that for yourself, try bending a piece of it both ways and see what happens. Maintaining a methodical approach to the framing of the flats during construction makes installation of a stiffener much easier.

Stiffeners can be used to align flats on more than one plane. Here are a couple of examples of how they can be used to form corners. In this case, more than a simple bar is required. Essentially, a soft-covered type of flat is built, but not covered. It is used only for its framing value.



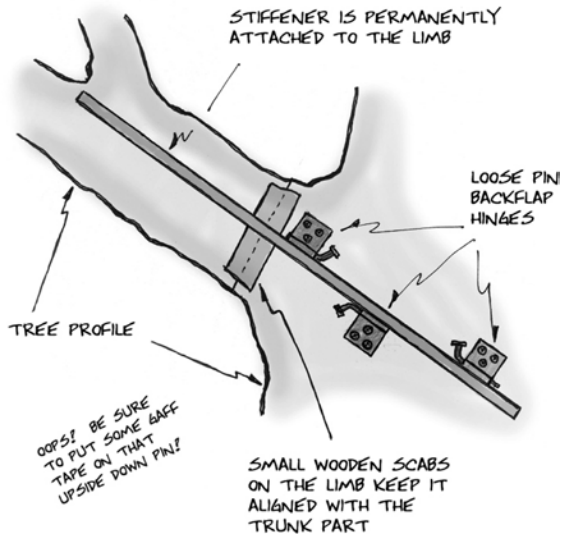
TWO DIFFERENT APPROACHES TO STIFFENERS BUILT LIKE FLATS
PLAN VIEWS

Sometimes a stiffener is used to connect oddly shaped profile pieces. Here a tree is used as an example. The central trunk is constructed as one piece, but it would be quite difficult to transport this unit with all of the other limbs attached.

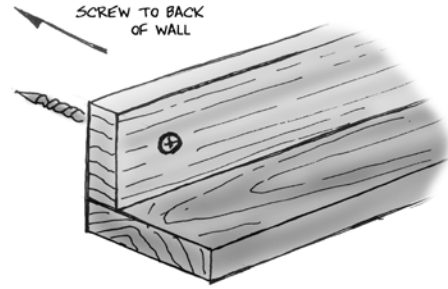


THIS UNIT IS TOO LARGE TO BE ONE PIECE

In this case, a stiffener is permanently affixed to the small sections, and loose pin hinges are used to fasten the other end to the main trunk. Put at least two hinges on one side and one on the other to trap the stiffener in place and keep it from rotating. Small scabs on the back of the added unit are also helpful to keep the pieces from twisting and telegraphing the joint.



The *hog trough* is a specific type of stiffener that is meant to be attached with drywall screws rather than with hinges. It is made in an L-shape, so that one board can be pressed against the wall you need to stiffen, and connected via the screws. The other board sticks out at a 90-degree angle and does the actual stiffening.



THE VEE SHAPE OF THIS HOG TROUGH STIFFENER KEEPS IT RIGID IN TWO DIRECTIONS. HOG TROUGHS WORK BEST ON SCENERY THAT WILL BE SET UP ONLY ONCE OR TWICE. HINGES WORK BEST FOR REPEATED SETUPS.

Stiffeners can also be made from a length of square tube with the hinges welded on. The advantage is that the tubing comes in 24-foot lengths and is considerably tougher than wood.