TECHNICAL SOURCE GUIDE

FAST AND FLEXIBLE FLAT FRAMES

By Roy Hoglund, Scenic and Lighting Designer, University of Wisconsin - Oshkosh

Scenery construction using light gauge steel tube is nothing new. However, its flexibility in a multi-use situation has not been extensively explored. At the University of Wisconsin, Oshkosh, the use of this material for flat construction was developed out of a need to produce 8-foot by 16-foot scrim-covered flats with no internal supports which could be rigged to fly. We chose 1-inch square, 16-gauge steel tube.

Steel tubing flats are normally constructed with butt welds in the corners. However, we have a shortage of storage space in our facility, and we generally try to build scenic pieces that can serve multiple roles in our inventory, so we devised a connecting joint that would facilitate easy disassembly of our steel tube flats. A 1-foot section of 3/4-inch square, 16 gauge steel tube was butt welded at a 90 degree angle to the ends of the top and bottom rail sections of the frame. Flats were assembled by simply sliding the rail sections into the style sections.

One-inch wide strips of 1/4-inch plywood were attached with contact adhesive to the back of the framing members. Half-inch self-tapping screws where driven through the plywood every 18 inches to hold the plywood in place until the adhesive had set up. The flats were covered with scrim by drawing the fabric around the steel tube and stapling it to the 1/4-inch plywood on the back side. Drawing the fabric around the frame, while normally not a good idea in flat construction, served our purposes well for three reasons: 1) all visible edges of the flat were covered, creating a clean rectangular unit, 2) stretching the fabric around the edges pulled the framing members together and held them tight thereby making it unnecessary to have any locking device to hold the frame pieces together, and 3) we planned to disassemble the flats for storage after each show, so we didn't have to worry about the fabric on the edges getting worn from repeated dragging and shifting.

In order to fly the frame unit, 1/2-inch holes were drilled through the ends of the 1-inch square steel tube rails into the 3/4-inch internal sleeve pieces. By doing this we were able to feed 1/16-inch cable through the top rail, completely around the hollow tube frame, and back out through the hole at the other end of the top rail. The continuous length of cable was connected to the batten for flying purposes. In the event that the frame did not hang straight, it was simply moved slightly on one side or the other for adjustment The final weight of the finished 8-foot by 16-foot frame was less then 40 lbs., making it easy for two people to handle.

These square steel tube flats have served us well through our many productions each year. The sleeving process has enabled us to create flat frames of various sizes, which we have covered with a variety of fabrics. When the flats are broken down, the fabric is folded or rolled for storage and the structural members take up very little storage space.

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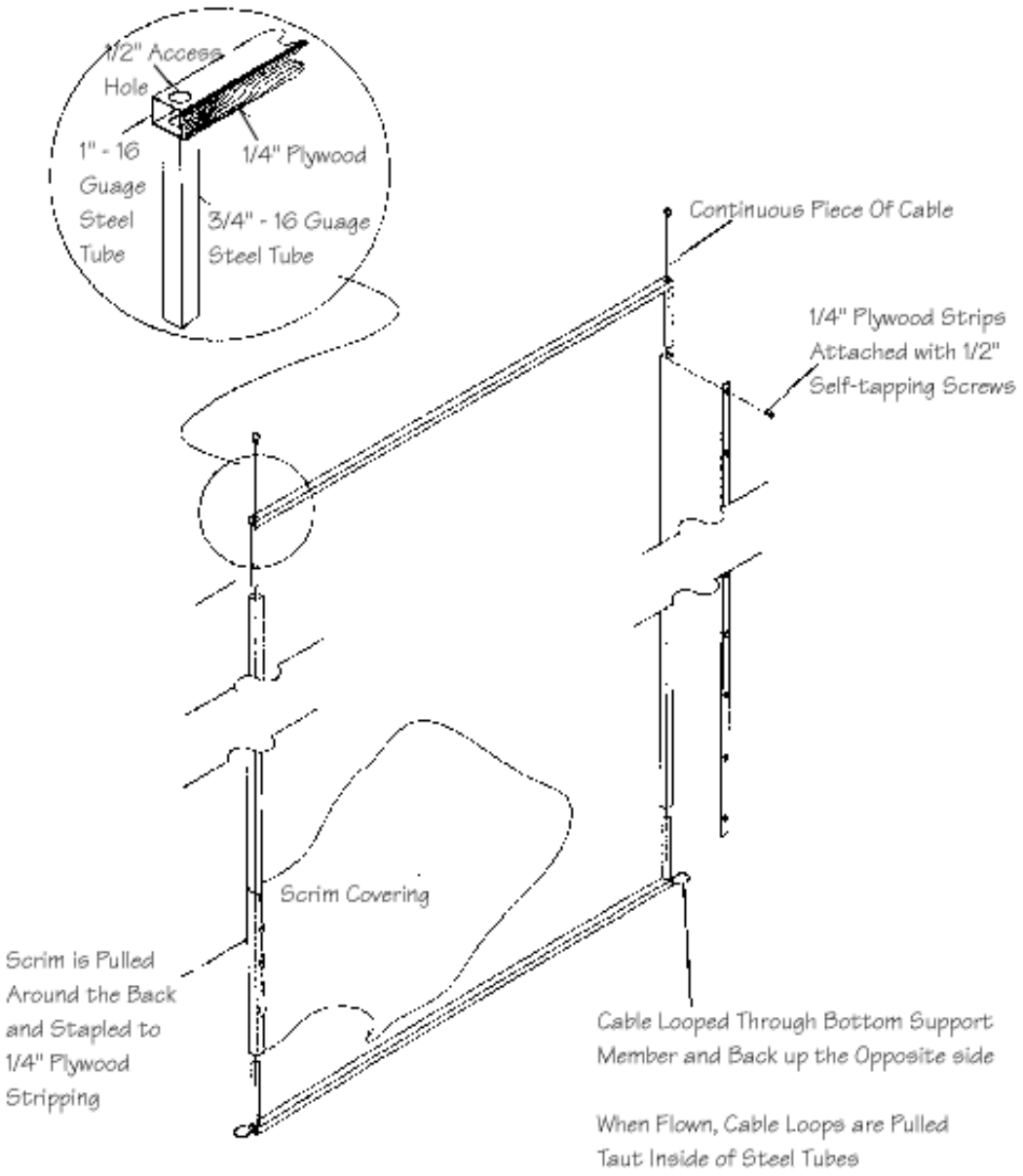

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