DROP BOOT CAMP
SQUARING AND SIZING

by Jenny Knott, Rosco Laboratories

I often get calls from people who are about to paint a drop for the first time. It is difficult to explain the whole process over the phone. This is a guide to aid in getting started with preparing muslin to become a backdrop. Although there are several ways to prep and prime, I address three processes that require materials that are easy to find and are also user friendly. My description is for a drop that will be painted on the floor. The floor surfaces I have used in the past have been ¾" Homosote, ½" Celotex, 1x pine framing and ¾" plywood. Surfaces that are not conducive to accepting staples are Masonite and Medite/MDF. Squaring and sizing vertically is also possible by adapting some of the steps.

CREATING A SQUARE

1. Sweep the section of flooring where the drop will be spread. This step eliminates lumps and bumps that, when brushed over, may telegraph their shape to the painted muslin surface. See Figure 1.

Fig. 1

2. Lay down 90# bogus paper. The paper should lay edge to edge with 2" wide tape centered over the seam. The finished length and width should be at least two feet larger than the size of the drop.

NOTE: The placement of bogus paper under the fabric is important, for it will absorb the water in the starch and the paint and, therefore, help with faster and even drying. Kraft paper is an option, the heavier the better; however, it has a tendency to warp when it gets wet and may give a ripple effect to the painted surface, if the drop isn't "floated." I will discuss this later.

3. Measure the fabric to check the size.

NOTE: Often, finished drops are made a slightly different size than the designer's elevation. Measuring the drop first gives you accurate measurements to create the box in which the drop is stapled.

4. Snap lines on the floor creating a box that is square. This task can be accomplished by either of two methods:

    A. Swinging an arc
    B. 3, 4, 5 Triangle

A.   **Swinging an Arc**
See Figure 2.

a. Snap a baseline with a chalk line, preferably using charcoal.

b. Mark outside dimensions and center point along the baseline.

c. From points A and B, swing arcs to find center. Use the same measurement for each arc.

d. Snap centerline from the center point on the baseline throught the intersection of the arcs.

e. Measure up from the baseline, and mark the height on either end, eyeballing the 90 degree angle.

f. Snap the top line.

g. To establish the sides of the box, measure from center out on the top line.

h. Snap sides of the box.

i. Measure diagonals to ensure it is square. A, D should be the same measurement as B, C.

NOTE: If there is more than a 3/8" difference in lengths of diagonals for a 20' x 30' drop, the drop will be out of square. If it is out of square, it may develop large puckers running across it when hanging on stage. Try squaring again!

j.   Ink in the box and make a mark for center line on top and bottom. Inking helps prevent the loss of charcoal snap lines.

B.   3, 4, 5 Triangle or Pythagorem Theorem: $A^2 + B^2 = C^2$
See Figure 3 on page 20.

a.   Snap the baseline and mark width (A) and the center point. From the center point to the corner forms the 3-unit side of the triangle. In this example the constant is 2.

b.   Mark line (B) up from the center, using a framing square to ensure a 90 degree angle. Line B is the 4-unit side of the triangle.

c.   Swing arcs from width points A. The radius of the arc (A) is the 5-unit side of the triangle.

d.   Snap center line from the intersection of the arcs through center mark on baseline.

e.   Create the top of the box by measuring up from the baseline on the center line and up from the width marks.

f.   Create the sides of the box by measuring out from the centerline on the top line.

g.   Measure diagonals to check that it is square.

h.   Ink-in the box that is now square.

NOTE: For a large drop, a larger number may be used as the constant. For example, 3 x 5 = 15, 4 x 5 = 20, 5 x 5 = 25.

5.   Staple the fabric down in the squared box. It is best to use at least 3/8" to 1/2" staples because 100% cotton fabric, when wet with water and size will shrink, putting a lot of tension on the staples. Thus, shorter staples may pop out of the floor, leading to disaster. The fabric should not be pulled taut in the box. There should be some looseness/bag in it or, when wet, it will rip the staples and the bridges out of the floor. The staples should be spaced about 2" to 3" apart.
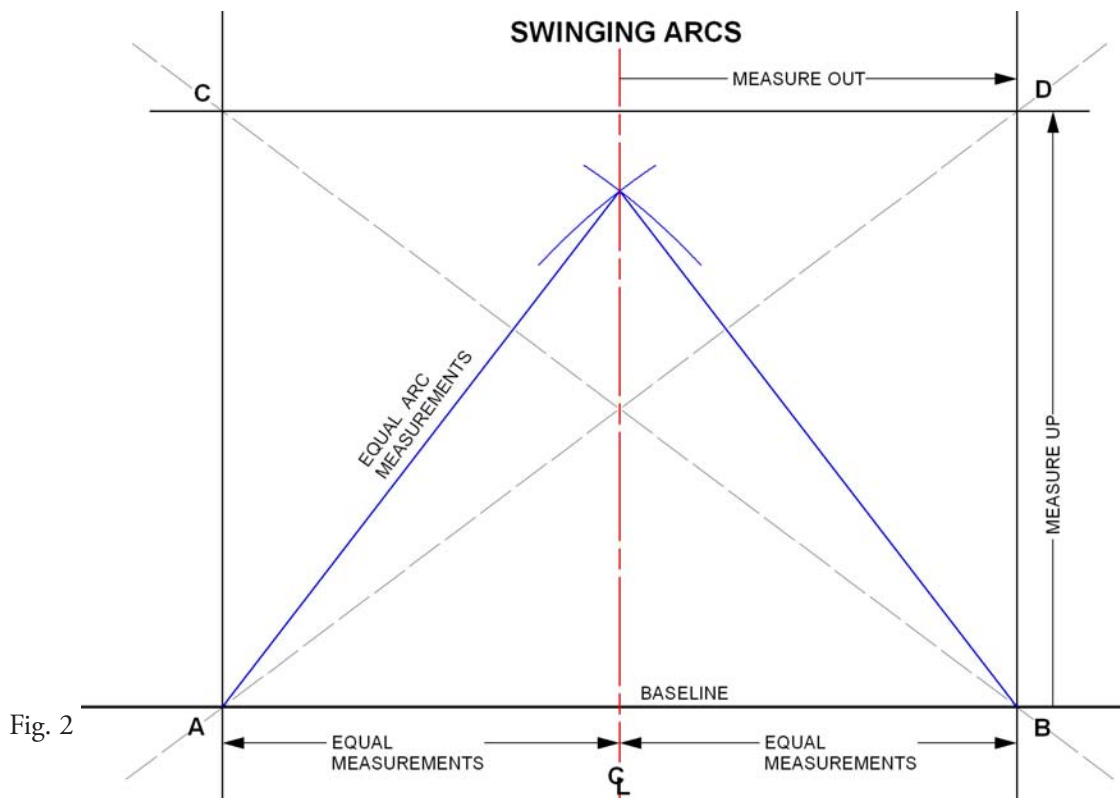

SWINGING ARCS

Fig. 2

The order in which to staple the fabric is as follows:

a.   Staple the four corners. See Figure 4.

Fig. 4

b.   Staple the center of the top of the drop.

c.   Staple the top of the drop at the midpoint between the corner staple and center staple. Continue stapling at the midpoint between staples until the top of the drop is secure.

d.   Staple the bottom of the drop, using the same procedure as for the top.

e.   The sides are tacked down last. If there are seams, staple those first. Then, staple the halfway points as above. See Figure 5.

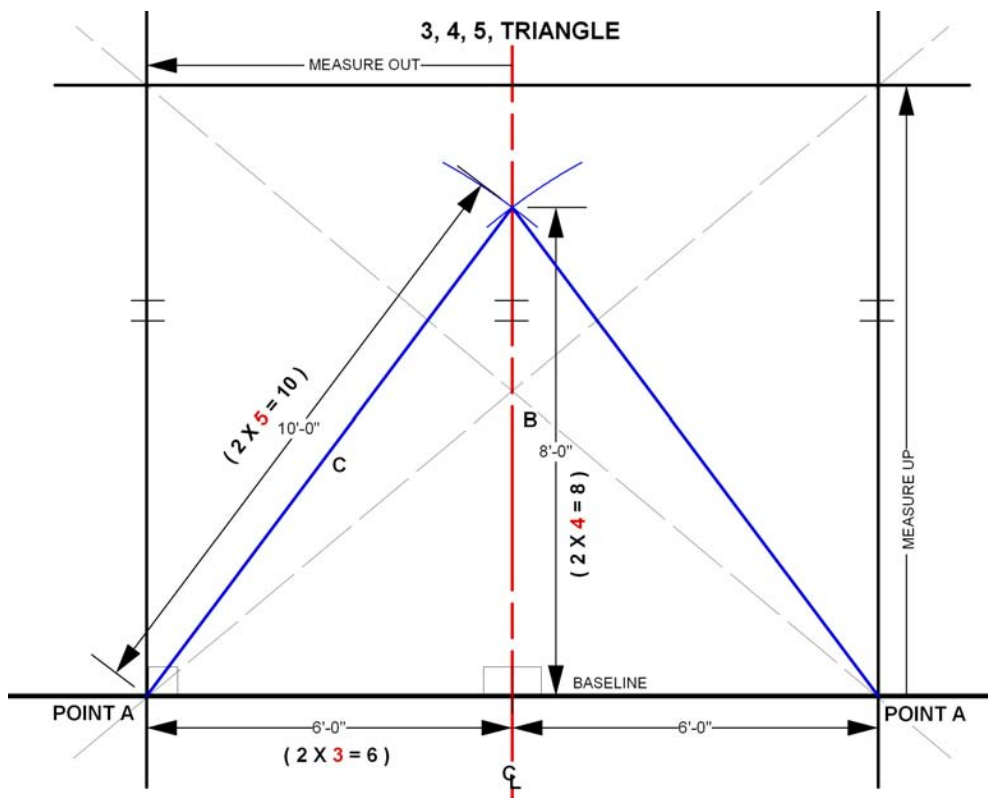Fig. 5

3, 4, 5, TRIANGLE

MEASURE OUT

(2 X **5** = 10)
10'-0"

C

B

8'-0"

(2 X **4** = 8)

MEASURE UP

BASELINE

Fig. 3

POINT A

6'-0"

(2 X **3** = 6)

6'-0"

POINT A

C L

NOTE: If there is extra fullness in the drop, pull the excess together at the center point and divide it in half. Staple the center. Split the fullness up over the length or width of the drop. Ease the excess by always dividing and splitting the fullness between the spaces between the staples. See Figure 6.

Fig. 6

When stapling down the sides, room should be left to add bridges. The purpose of the bridges is to leave an open area through which air flow from fans will raise the fabric off the floor. This will keep the fabric from sticking to the paper and allow it to dry faster. Floating the fabric ¼" is enough, although it can float 3" or 4" off the floor without stretching out of shape and creating puckers. If stretching and puckering occurs, let the drop dry. Then, using a hand pump type sprayer, spray it with warm water. It will "size up," become taut, when dry. See Figure 7.
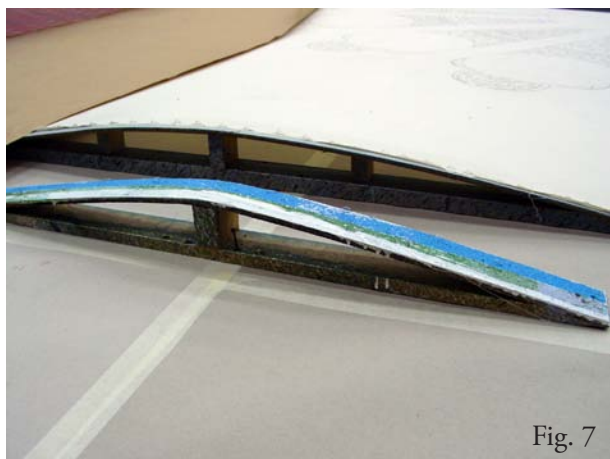

Fig. 7

Fig. 8

If bridges aren't available, other objects will do the trick. See Figure 8.

6. Remove all dirt, strings, and fuzz from the drop. This can be accomplished by flogging it and/or rolling over it with a roller wrapped with tape, sticky side out, to pick up the fluff.

SIZING THE DROP

Sizing is an important step in preparing the fabric for paint. Unsized muslin will take paint differently than sized muslin. Sized muslin will allow the paint to be "pushed" around easily, allowing for wet blends. Paint applied to unsized muslin just sits where the brush touches the fabric. Painters have to work hard at blending the paint on un-sized muslin. For this reason, they often push the paint through the fabric, which causes the paint to act like glue and stick to the paper under the drop.

Three recipes for making size.

The recipes below are general suggestions. Before applying any mixture, especially for the first time, it is wise to try it on a test panel first. If the recipe needs to be adjusted, it will be better to find out on a test flat than on an expensive drop. See Figure 9 on page 22.

A. Argo Gloss Laundry Starch. This white powder is packed in a 1 lb box. A box of starch will make 2 to 5 gallons of size, depending on the thickness or thinness desired. Thicker starch is used for translucent drops. The following recipe is for general drop sizing. This method will tighten the fabric the most.

a. Mix into ½ gallon of cold tap water the 1 lb box of starch, stirring continuously until starch is completely dissolved. It will have a white, silky appearance.

b. Bring 2 gallons of water to a boil.

c. Slowly add the cold water/starch mixture to the boiling water, whisking constantly. The white mixture should thicken and become translucent.

d. Strain mixture, through a cheese cloth-covered metal sieve, into a clean 5 gallon bucket. This will remove lumps and other debris that will clog the spray nozzle.

e. Add 1 to 1 ½ gallons of warm tap water to the starch, stirring constantly.

Fig. 9

B. Rosco #7500 Flexbond Glue. This clear drying, flexible glue is packaged as a white liquid in a 1 gallon jug or 5 gallon pail.

a. 1 part Flexbond to 10 parts water.

b. While stirring constantly, slowly pour the water into the Flexbond glue.

(For approximately 5 gallons of size – mix together 4 pints of Flexbond glue to 4 gallons and 1 quart of water.)

C. #5350 Off Broadway White. This is a thick, vinyl acrylic, water-based, clean white paint.

a. 1 part Off Broadway White to 6 to 8 parts water. The amount of water will vary depending on personal preference and opacity desired.

b. While stirring constantly, slowly add the water to the paint.

NOTE: Any liquid that is to be sprayed through any type sprayer should be strained before going into the spray canister.

Applying the Size

1. Starting at the top of the drop and working down, use Hudson type sprayer to apply the size to the fabric. See Figure 10.

NOTE: The spray nozzle should be a cone tip. The spray is applied in a circular fashion, holding the wand at least 25" from the surface while distributing the size in an even and uniform manner.

The sprayer --a self-pressured, siphon feed model-- is available at most hardware and home improvement stores, in the lawn and garden section.
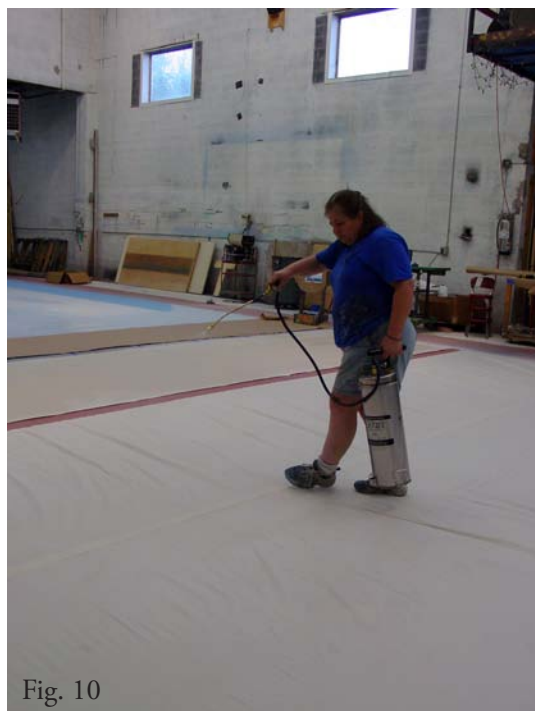

Fig. 10

2. Lightly "broom-in" the size, using a figure-eight stroke to distribute the liquid evenly over the drop. Carefully avoid pushing the size too hard and pressing it through the fabric, thus gluing the drop to the paper. See Figure 11.

Fig. 12

3. When one-third of the way down the drop, turn on the fans. The flow of air through the bridges and under the fabric will "float" the drop. The movement of air over and under the wet surface will enable the drop to dry faster and prevent it from getting stuck to the paper.

   NOTE: Keep an eye on the drop with the air flow under it, to make sure the fabric doesn't "balloon up," and over-stretch.

4. Turn the fans off when the drop is almost dry.

   You are now ready to cartoon and paint.

For further information and additional recipes, please check the following references:

Backstage Handbook: an Illustrated Almanac of Technical Information, by Paul Carter, ISBN: 0-911747-39-7

Designing and Painting for the Theatre, by Lynn Pecktal, ISBN: 0-03-011901-4

Scenic Art for the Theatre, by Susan Crabtree and Peter Beudert, ISBN: 0-240-80462-7

ABOUT THE AUTHOR
   Jenny Knott is a graduate of the University of Missouri, Kansas City with an MFA in Design and Technology. Jenny freelanced as a Scenic Artist for over 20 years. She worked for regional theatres such as Missouri Rep, Arena Stage, Guthrie and Goodspeed Opera House as well as union scene shops, and was an artist-in-residence at the University of Illinois-Champaign/Urbana. She is a member of USA 829.   Jenny joined Rosco as their Paint Products Manager in July of 2003. She continues to paint on the occasional weekend for the Goodspeed, keeping current with new painters and new ways of approaching paint challenges.