

## FABRICATION OF KNEE ROLL SEAT

1. Measure area seat is to fit or make a pattern for seat bottom. If you are fabricating seats side by side, allow for materials at edges and or back. If the back of seat needs to fit under a seat back be sure to allow for proper thickness when figuring the overall thickness/height of your finished product.
2. Select substrate: This can be plywood, starboard, or pvc board. My preference is marine plywood (1), exterior grade fir plywood. (2), starboard (3), pvc board (4), marine plywood's 5 to 7 laminates provide a strong base, is easy to cut and sand and remains stable in the marine environment. Fir plywood works well, but the laminates have voids, marine plywood has no voids. Starboard is excellent but expensive and heavier than wood. Pvc board is ok but I've replaced many that have warped or bowed from heat and weight.
3. After cutting your base from marine plywood, or fir plywood, it must be sealed to eliminate moisture and water penetration. Remember to drill air holes for foam recovery and any holes for "T" nuts or screws if required for mounting. Sand edges top and bottom for a smooth finished product. Seal all edges and top & bottom and inside of vent holes. Solid color acrylic deck stain is easy to apply for sealing, easy clean-up, and readily available. Recommend applying 2 coats on raw wood. Applying sealer is not necessary if using pvc or starboard.
4. Cutting and shaping foam for knee roll:
  - (a) Buy preshaped foam from Sandy at foam to size.
  - (b) Buy  $\frac{1}{2}$  round foam and glue to block foam to achieve the desired size required.
  - (c) Fabricate your own to desired size from standard sheet foam of various thickness. The base to start with should be minimum 4" thick medium or firm density. Cut strip 5" to 7" wide to start the build. Cut a 45 angle on the two top edges along length of roll. See diagram #1. This can be cut with a carving knife (buy at walmart; \$10). Cut slowly and be as accurate as possible. Only cut about  $\frac{1}{2}$  -  $\frac{3}{4}$  off edges.
  - (d) Now cut the foam required for the balance of the seat behind knee roll. This foam should be approximate  $\frac{1}{2}$ " larger than the base wood on 3 sides and fit to back of knee roll foam. See diagram #2
  - (e) Mark line on top side (foam side) of base. This will be the pull strip/staple line between knee roll & seat. Fit foam as shown in sketch, but Do Not glue in place. (Dry fit). (f) Lay all aside: you are not ready to pattern, cut, and sew the cover.

## PATTERN OF KNEE ROLL COVER

5. Select a quality marine grade vinyl with a soft hand to produce the cover. Any vinyls from "Softside" line or the Ultra-Leathers work extremely well.

The first pattern needed is the side of the seat from front to back including the "rise" and shape of the knee roll. Make this pattern from scrap vinyl or cardboard and layout the actual finished size (add seam allowance when cutting the cover for sewing). The actual finished size allows you to "visualize" the finished product you are trying to achieve. This step may require several attempts to get the correct proportions for an "OEM LOOK." The pattern will be similar to diagram #3. Once you achieve the desired end panel pattern, simply measure the finished seam line to get the length of material required for the cover. Remember to allow for all seams and a minimum of 2" to pull and staple all edges. If necessary mark match marks on the end panel and additional pieces to be sewn to keep accurate while sewing. Cut all pieces (including welt) and sew together. Remember to cut the pull strip and sew in the line at back of knee roll. Cut this strip from scraps; I prefer light weight stamoid which is strong and durable. Cut this piece 1 1/2" shorter than the finished width of cover so it does not get caught in the end panel seams. End panel seams can be welted, French seamed, or top stitched. No welt and top stitching produces a clean, slick finished product.

6. Assembly and Upholstery.

(a) Glue foam in place on board starting with back piece; align with mark on board for pull strip. Cover foam with 1 mil painters plastic (available at Lowe's/Home Depot on a roll), and slip the cover in place and base tack in position.

(b) Set base foam in front of pull strip, cover with 1 mil plastic and slip cover over front to determine how much foam will be required to fill cover for knee roll. Remove cover before gluing additional foam to complete the knee roll. Cut a piece of 1" soft foam the length and height required to glue over the base foam of roll. Cut a 45 degree angle along the edge of 1" piece and glue to base foam with angle next to the base piece along pull line. See diagram #4

Reset roll foam on board, recover with 1 mil plastic and slip cover over roll to check for fit before final upholstery. Add an additional 1/2" layer over 1" if necessary. Base tack entire cover in place to achieve a final finished product. Make adjustments as required, and finish staple the cover in place.

Congratulations! You have completed a knee roll seat cushion from scratch. Practice makes Perfect, and these instruction/directions should enable you to produce a quality OEM product for your customers.

Tools Required: Jigsaw, sander, staple gun, air compressor, 1 mil plastic, stainless steel staples, pliers, acrylic stain, foam (various thickness), pattern materials, scissors, carving knife, spray foam adhesive, straight edge, sharpie/pencil, vacuum (clean up), carpenters square, silicone for cleaning and lubing knife blade, and vinyl or fabric for cover.

DIAGRAM #1

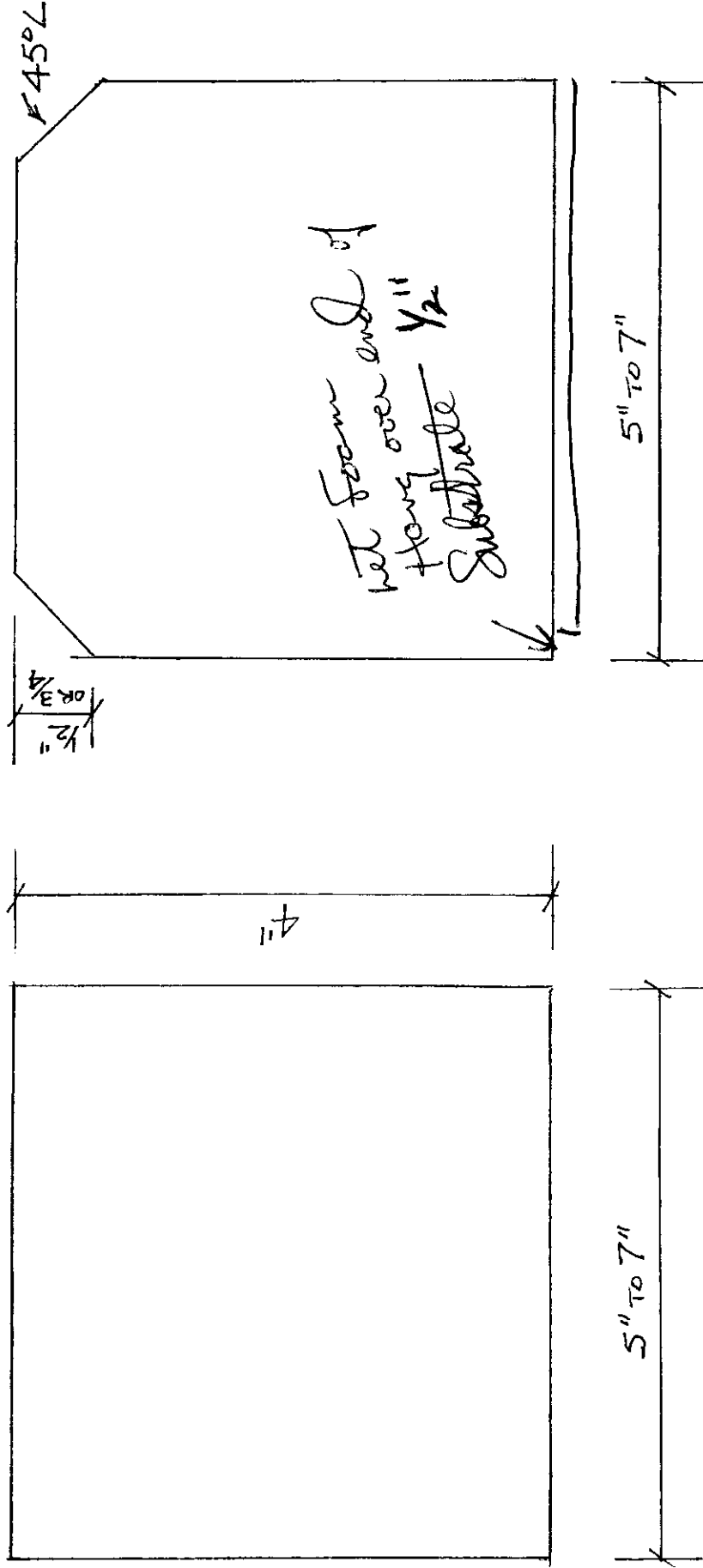
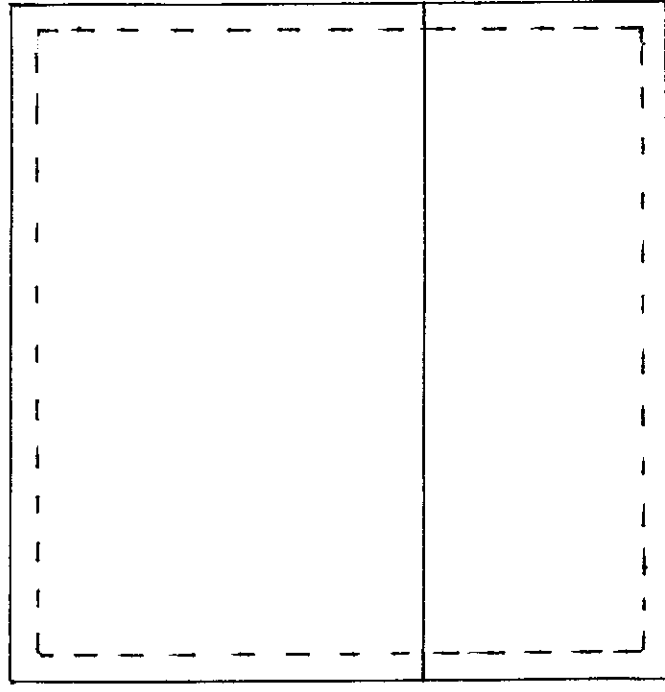
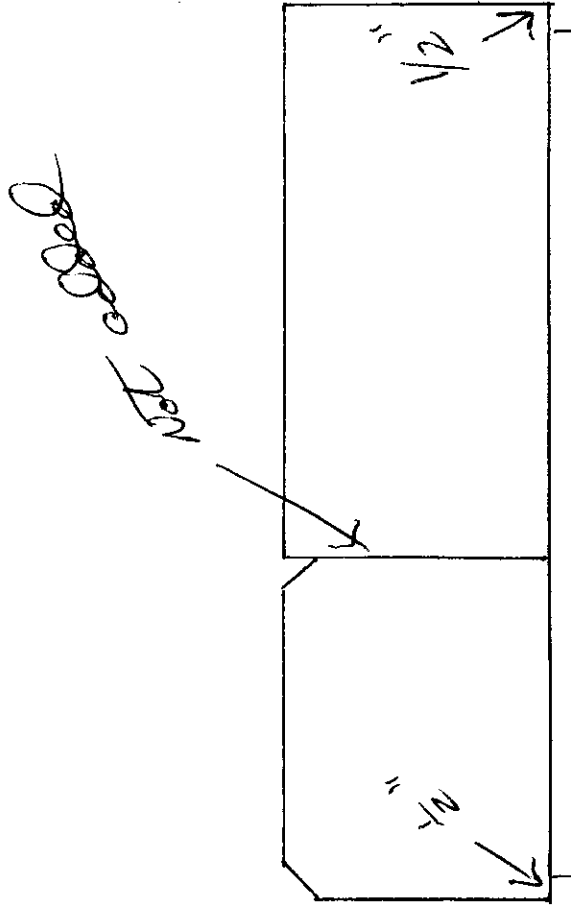


DIAGRAM #2



TOP VIEW



SIDE VIEW

DIAGRAM #3

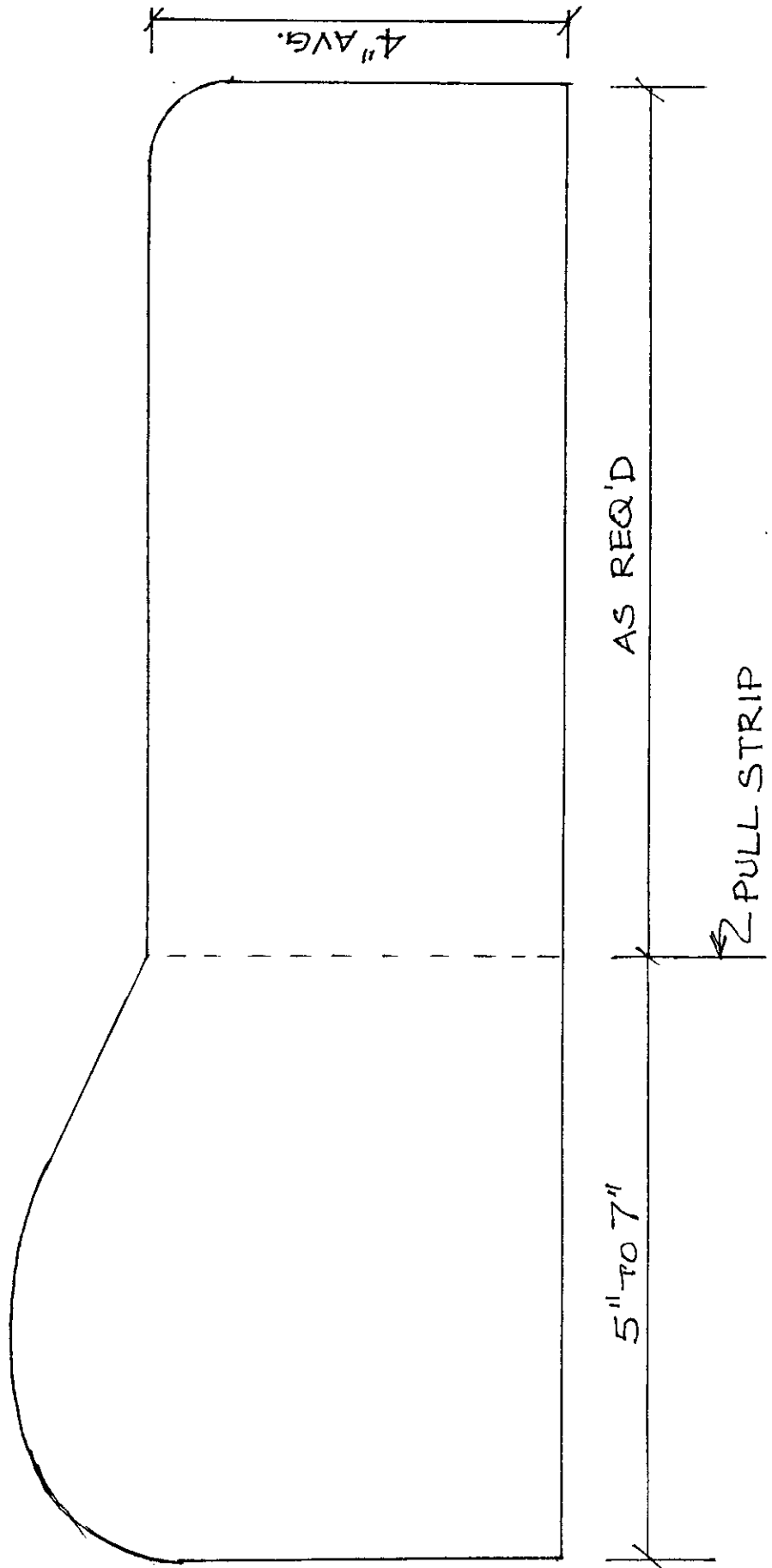


DIAGRAM #4

