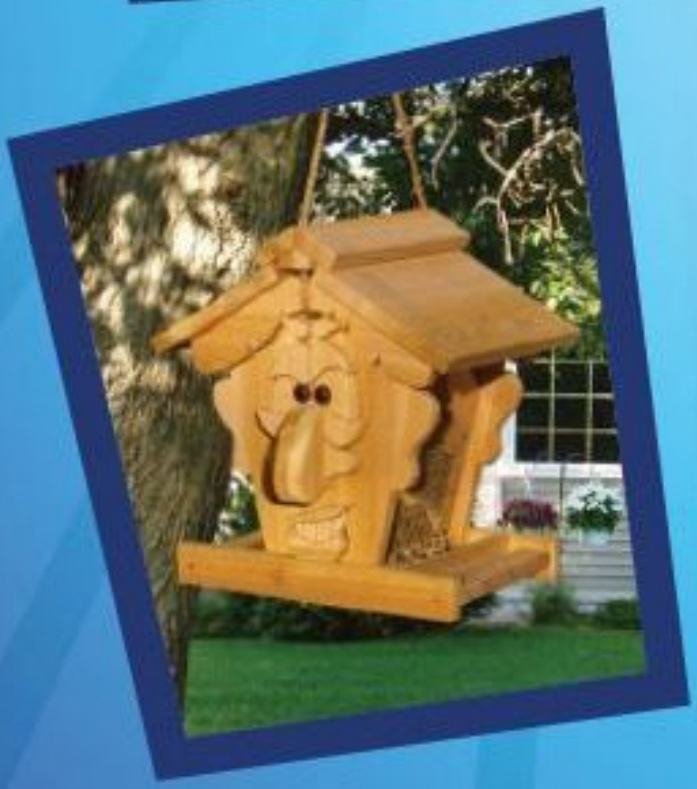
WILD & WACKY BIRDHOUSES AND FEEDERS

PAUL MEISEL

18 CREATIVE AND COLORFUL PROJECTS THAT ADD FUN TO YOUR BACKYARD



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DEDICATION

I would like to dedicate this book to my grandson Griffin Meisel, who, at the age of 6, has managed to create an amazing assortment of woodworking projects. His enthusiasm is an inspiration to me, and his originality, like adding the arrows on his squirrel feeder to make sure the squirrels would know how to get in, is a source of constant delight.

Griffin's Squirrel Feeder with directional arrows.

ACKNOWLEDGEMENTS

Thanks to Boyd Emerson, Kim Truax, and Johanna Rich for help with building, designing, and photographing the projects.

Thanks to Lorrie Ham for help proofing the manuscript.

Special thanks to Andrew Troyer for allowing me to incorporate his bluebird house design as a basis for developing the bluebird abode project.

Special thanks to Diane Oberlander for providing photographs of the hatchlings in the Bluebird Abode birdhouse.

ABOUT THE AUTHOR

Paul Meisel's experience in woodworking and design is extensive. During his years as an industrial arts instructor, Mr. Meisel realized the need for project plans that the beginning woodworker could manage. He began designing projects that excited interest in students yet did not exceed their skill level.

Realizing the need for well-designed plans for the school as well as the home hobbyist woodworker, he and his wife, Pat, set about creating a mail order company for the distribution of these plans. They took their unique concept one step further by offering many hard-to-find specialty hardware parts. Their company, Meisel Hardware Specialties, has become one of the nation's leading project plan and woodworking supply companies.

The company has designed and published plans for over 3,500 woodworking projects, all of which feature Mr. Meisel's rigid criteria for simple, practical construction. He is dedicated to providing fresh ideas that focus on clean, straightforward designs that create maximum impact but use common lumber sizes and simple painting and finishing techniques. He specifies materials and power tools that are readily available to the do-it-yourselfer.

Mr. Meisel has received numerous awards for his woodworking projects. Many of his designs have appeared in books and magazines.

In 1993, Mr. Meisel co-authored *Country Mailboxes* with Patrick Spielman. In 1999, Mr. Meisel's book *Making Lawn Ornaments in Wood* was published by Fox Chapel Publishing Company, which also released his books *The Big Book of Christmas Scroll Saw Projects* in 2002 and *The How-To Book of Birdhouses and Feeders* in 2004.

Mr. Meisel maintains a backyard nesting and feeding station at his home in suburban Minneapolis. He is a member of a Bluebird Recovery Program and maintains his own bluebird trail.

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INTRODUCTION

The purpose of this book is to provide the hobbyist woodworker with a wide variety of birdhouse, bird feeder, and squirrel feeder designs that can be built in the average home workshop. Each design was selected for its unique style and character. Call the designs wild or whimsical or even silly, but when you display any of these projects in your yard you'll have something unique and refreshingly different from the hum-drum "utility" birdhouses and feeders sold in stores.

Designing projects that were wildly different than the "utilitarian" items available to the public at large was just one of the challenges. I also wanted to offer designs that would not exceed the skill of the average hobbyist. All the designs presented here incorporate basic construction techniques that do not require specialized tools. You'll need access to a table saw, a scroll saw, a drill press, and common hand tools. A router and a drum sander (or a drum sander attachment for your drill press) are not necessary, but they simplify the building process. The building materials specified include exterior plywood as well as pine or cedar boards—all of which are readily available from home centers or lumberyards.

After placing birdhouses and feeders outside your home, enjoy watching the antics of wild birds, no matter where you live. The many tips in this book help attract birds to your yard. You learn which seeds attract specific birds, how to store birdseed safely, and which birdhouse sizes are more likely to attract certain birds. I also provide suggestions for painting and finishing your projects.

TRANSFERRING PATTERN DRAWINGS TO YOUR WOOD

Full-size pattern drawings are provided for many of the smaller parts where space permits. Patterns that are too large to fit on a single page are reduced in size and presented as "scale" drawings. To enlarge or "scale-up" these drawings, use a photocopier and enlarge the drawing to the percentage shown.

It is usually not necessary to enlarge scale drawings of simple rectangular-shaped parts. These drawings can be transferred directly to wood with simple layout tools such as a ruler, a compass, a try square, and a sharp No. 2 lead pencil.

Where drilled holes are specified, drawings show the diameter of the hole, the depth it is to be drilled, and the location. For scale drawings use layout tools to locate the center of each hole, then mark this center location with a scratch awl. The indentation left by the sharp point of the scratch awl helps prevent the drill bit from wandering off center when you drill the hole.

As a general rule, you won't need to photocopy scale drawings unless they contain scroll shapes. You can use layout tools to transfer the length, width, and hole locations of these parts directly to the wood.

You are permitted to photocopy the drawings within the limits outlined in the copyright notice of this book. You can then transfer the patterns from these photocopies to the wood using carbon paper or transfer paper. Another method is to glue the photocopied patterns directly to your wood using temporary bond spray adhesive. These methods are fully described below.

USING CARBON PAPER:

Carbon paper has been around for years. It is paper with a heavy coating of ink or carbon black on one side. To use it place the ink side down and on the wood, place the pattern on top and trace the pattern with a pencil. Carbon paper leaves dark lines that are easy to see, however, these lines cannot be easily erased.

USING GRAPHITE PAPER:

Graphite transfer paper, usually referred to as transfer paper, is used in the same way as carbon paper. The main difference between the two is that the transfer medium is graphite instead of ink. With transfer paper, the lines won't be as dark as with carbon paper. Graphite transfer paper has one advantage however: it can be easily erased from wood using a common pencil eraser.

ATTACHING PATTERNS WITH SPRAY ADHESIVE:

The best way to transfer patterns is to photocopy them and glue them directly to the wood using temporary bond spray adhesive. For best results follow this procedure:

1. Make sure the surface of your wood is dust free.
2. Spray a light fog of adhesive on the back of the paper pattern. Stop spraying before the paper gets wet or soaked through with glue. Let the paper dry a few minutes if you have over-applied the adhesive.
3. Stick the paper pattern to the wood. Note: Spray adhesive should not be sprayed directly onto the wood itself because this makes both the pattern and the glue residue left on the wood difficult to remove. With a little experimentation, you can develop a feel for just how much adhesive to apply.

Temporary bond spray adhesive

BEFORE SAWING THE PIECE OUT, MARK THE LOCATION OF ALL HOLES WITH A SCRATCH AWL.

Punch through the pattern and into the wood. But don't drill the holes until after you have finished cutting out the pieces on your scroll saw, otherwise the drill bit may rip the paper pattern.

4. After you have finished sawing out the pattern, peel off and discard the paper.

Rubber cement thinner and this handy dispenser are available from art supply stores.

GETTING STARTED

Begin by paging through the book to decide which projects you wish to make first. For each project you will find:

1. A photograph and description of the project;
2. A Plan of Procedure;
3. Final Assembly instructions and exploded Assembly Drawings;
4. A Bill of Materials listing the size of all wood materials as well as any hardware required, and
5. Finishing suggestions.

COLOR PHOTOGRAPH AND DESCRIPTION

The color picture gives you a good idea of what your finished project will look like, especially if you use the same type of wood and the same stain or paint colors suggested. Read over the description to learn background information about the project. This can help you decide which project to make first.

TIP:

THE BEST WAY TO REMOVE EXCESS SPRAY ADHESIVE FROM YOUR WOOD IS WITH RUBBER CEMENT THINNER.

PLANS OF PROCEDURE

The Plan of Procedure describes how to proceed with the cutting of each piece. For scroll shaped pieces, which would typically be cut on a scroll saw or band saw, the Plan of Procedure step says "transfer the pattern and cut out." In other words, transfer the pattern to your wood with transfer paper or glue a photocopy of the pattern to your wood.

For square or rectangular-shaped parts that are best cut on a table saw, the Plan of Procedure says "layout and cut to size." This can usually be done by setting your table saw to rip the board to width or cross cut it to length. Where angles are required or where holes need to be drilled, use layout tools to mark these locations on your wood.

In either of the two examples above, if two or more identical pieces are required, this is noted (i.e., Two pieces required).

FINAL ASSEMBLY INSTRUCTIONS AND EXPLODED DRAWINGS

Once you have cut each piece to size, it is time to assemble the parts. The Final Assembly instructions, together with the Exploded Assembly Drawings, describe how the pieces of the project fit together and the order in which to assemble them. Refer to both when assembling the project.

Although the assembly sequence is explained, the choice of fasteners is, for the most part, left up to you. For general construction, either nails or screws can be used. On critical joints where screws should be used for strength, the screw-hole locations are shown on the pattern drawings and the recommended screw size is given in the Bill of Materials. Be sure to use water-resistant glue for all glue joints. Use nails or screws designed for exterior use.

Remember that birdhouses and feeders must be cleaned several times each year. For birdhouses, this is typically done by removing the top, the bottom, or one of the sides. For feeders with an enclosed hopper, the top or top section should be removable. For this reason, screws (no glue) are used to facilitate partially disassembling most of the projects in this book. For birdhouses with an inset bottom, which must be removed for cleaning, remember to cut the bottom slightly undersized so it won't fit too tightly.

Although not included on the drawings themselves, ventilation holes should be drilled at the top of every birdhouse. Birdhouses stationed in hotter climates require larger vent holes that those in cooler climates. Although not shown on the patterns, the top of the left and right sides of some birdhouses can be shortened by ¼" (6mm) to allow increased side-to-side ventilation.

Drainage holes should be drilled in the floors of all birdhouses. Drill four or more drainage holes through the floor using a ¼" (6mm) or larger diameter bit. Another method is to nib the corners of the floors at 45 degrees as shown on the drawings for the Cartoon Kids birdhouses.

BILL OF MATERIALS

I provide a Bill of Materials list for each plan. It contains a great deal of information: The first column indicates the number of pieces required. The second column provides a description. The last column shows the size. Wood parts are listed by thickness, width, and length, with the smallest piece at the top of the Bill of Materials.

Required hardware parts are listed together with a description and size. Nails, screws, and dowels are all readily available and should be easy to purchase locally. Other hardware items such as plastic eyes, plastic side plates, jars, hinges, hooks, decals, screw eyes, chain, flush

mount hangers, or plastic plugs may be more difficult to find. These items can sometimes be found in craft stores or hardware stores, but in case you have difficulty, a mail order source is provided in Appendix A. These items are starred on the Bill of Materials.

In a few cases I have omitted drawing simple square or rectangular-shaped parts. In these instances, the words "not drawn" appears in parentheses. Simply cut these parts to the widths and lengths given.

FINISHING SUGGESTIONS

For projects made from cedar, such as the Bear Birdhouse, the Old Men Bird Feeder, and the Oriole Wishing Well, you may choose not to use any finish and just let the cedar age to its natural silver-gray color. If you choose to finish them, sanding sealer followed by a coat of exterior polyurethane works well. Projects such as the beaver birdhouse and piano squirrel feeder were made from pine. These projects were finished with a wood stain and top-coated with exterior polyurethane.

For projects that are painted, I used either exterior house paint or Delta craft paints top-coated with Delta clear exterior varnish. I prefer Delta paints and have listed their color names and numbers in the text, but please use whatever paint you find works best for you.

If you paint your project, begin by covering all knots and other wood defects with a stain blocking primer as described below. You could also use the stain blocking primer to prime the entire project, but I prefer to use a white exterior acrylic latex primer because it is thinner and therefore tends to better soak into the wood. After priming, sand with 220-grit sandpaper and begin painting the various colors of the top-coats. When only a few colors are needed, purchasing exterior acrylic latex house paint is a viable option. If you have paint leftover from the last time you painted your house and you want to match your house color to your birdhouse, by all means use it. But if the project calls for several different colors, purchasing house paint, which is usually available in quart or gallon cans, can get expensive. Another option is to use 2-ounce bottles of Delta craft paint. Although this paint is not made expressly for outdoor use, my experience is that it holds up remarkably well as long as it is top-coated with exterior clear varnish.

One of the big advantages of using craft paint (besides the fact that it is available in small bottles) is that it comes in such a wide array of colors.

If you want your project to look just like those pictured, I have listed the Delta part numbers of the paints for some projects in the Bill of Materials. If you look at the Bill of Materials of the Underside Suet Feeder, for example, you will see the "generic" colors—black, white, blue, and orange. The cross reference for the color blue is Delta #02133, which Delta calls "Cape Cod." It is a bluish-gray, which I think is very close to the color of the nuthatch. Since there is no end to different colors or shades of blue paint, I felt the Delta paints would be the easiest way to accurately convey how to make your project match those shown in the photographs. Delta craft paints and exterior varnish are available in many craft stores.

THE EFFECTS OF THE OUTDOOR ENVIRONMENT ON YOUR HOUSES AND FEEDERS

The harsh effects of outdoor weather are very damaging to wood and paint. It is essential that you prepare the surface of any birdhouse or feeder properly and to choose the highest quality primer and paint available. The three most damaging effects to outdoor projects are ultraviolet (UV) radiation, moisture, and changes in temperature.

SUNLIGHT AND UV RADIATION

Direct sunshine can degrade the binder and pigment of paint. Binder is the additive in paint that helps it adhere to the surface being painted. Pigment is the material used to color the paint. Degradation caused by the sun can result in chalking (a white, chalky dust) and loss of color. While all grades of paint suffer these effects to some degree, lower quality paints and interior paints (used outdoors) generally fail earlier than top quality exterior paints.

The binders in acrylic latex paint tend to resist the effects of direct sunlight better than the binders in oil-based paints. The reason is that the binders used in acrylic latex paints tend to be transparent to UV radiation, while oil binders actually absorb radiation, which tends to break them down. Red and yellow paint colors are especially vulnerable to fading from UV radiation.

TIP:

NEVER ATTEMPT TO PAINT WOOD THAT HAS HIGH MOISTURE CONTENT. ALLOW WET WOOD TO DRY FIRST.

WATER AND MOISTURE

Moisture is especially hard on exterior paint. The source of the moisture can be rain, dew, lawn sprinklers, condensation, or humidity from the substrate (the plywood or wood lumber). As with UV radiation, moisture tests the paint's resistance to chalking and tint loss. Better grades of acrylic latex paint help to fight these problems better than oil-based paints.

Water and moisture can also cause blistering of the paint. When wood gets wet, it expands (swells). When wood dries, it contracts. This puts great stress on the paint.

Acrylic latex paint is permeable, or breathable, and therefore allows the water to vaporize and escape.

TEMPERATURE CHANGES

Quite naturally, changes in temperature occur to a much greater degree outdoors than they do indoors. Like moisture, temperature changes cause the wood to expand and contract, putting added stress on the paint.

Quality paints that offer both superior adhesion and flexibility help prevent cracking and flaking. Top quality acrylic latex paint is an especially good choice for exterior applications in areas where there are many heavy freeze-thaw cycles.

STAIN BLOCKING PRIMERS

A primer is defined as a paint coating designed to form a film on which a succeeding finish coat, or coats, of paint can be applied.

Stain blocking primers are formulated to prevent bleed-through. Stain bleed-through is a brownish or tan discoloration that appears sometimes several months after the project has been painted. Naturally, it can be quite unsightly, especially on white or light-colored paints. To avoid bleed-through, knots and other lumber defects should be primed with a stain blocking primer.

Common stain blocking primers are manufactured by Wm. Zinsser & Co., Inc. and Masterchem Industries.

Examples of stain blocking primers available in most hardware stores and home centers.

ACRYLIC LATEX PAINT VERSUS OIL PAINT

Acrylic latex primers and gloss or semi-gloss acrylic latex exterior paints are the best choice for outdoor wood projects. This is not to say that oil-based primers and paints should not be used. Oil-based primers do have their advantages. For example, they are better suited to hide imperfections and therefore have better coverage. They also offer better adhesion to wood and therefore seal the surface better. However, after considerable experimenting, I have found acrylic latex primer and paint to be the all-around best choice for painting outdoor projects. The following comparison chart outlines some of the advantages of acrylic latex paints versus oil paints.

COMPARISON OF ACRYLIC LATEX VERSUS OIL-BASED PAINTS

	ACRYLIC	OIL
Drying Time	1 - 4 hours	24 - 48 hours
Vehicle	Non-flammable - Minimal offensive odor	Flammable - Toxic, mineral based
Fumes	Minimal risk of inhalation	Toxic. If used indoors - Must be well-ventilated
Liquid used for thinning	Water	Paint thinner or turpentine
Cleanup	Warm water and soap	Paint thinner or turpentine - Must be well-ventilated

ADDITIONAL TIPS

When you purchase paints, be sure to have your dealer shake them. This will ensure that all the pigment is suspended evenly throughout the paint. Also be sure to ask the paint dealer for complementary wooden stir sticks. Use these wood sticks to mix the paint immediately after opening the can, and periodically while you are painting, to be absolutely sure that the color and pigment stay evenly distributed.

Don't apply extra-heavy coats of either primer or paint. An extra-heavy coat does not necessarily offer better protection. In fact, coats that are too thick usually crack, which results in less protection.

FULL SIZE PATTERN DRAWINGS

Large plan sheets that include full-size patterns are available for each of the projects in this book. These plan sheets eliminate having to enlarge the patterns on a photocopier. See the ordering information in Appendix B.

GENERAL INFORMATION ON BIRDHOUSES

There are about 30 different species of birds that will build nests in a birdhouse. Most are desirable visitors to your yard. A few, however, may not be quite as welcome. Sparrows are one example. Both the house sparrow, which is found in all 48 continental states, and the song sparrow, which is found in the northern half of the lower 48, are considered by many to be "rogue," meaning "birds that vary remarkably from the standard, especially an inferior bird."

Sparrows were introduced into the United States from England in the middle of the nineteenth century. They became established and spread rapidly. Sparrows steal food from other species, including our native American song birds. They thrive on almost any kind of edible food.

When a sparrow family adopts one of your birdhouses to build a nest, they stuff all manner of nest building materials through the entrance opening. It seems as though they don't know when to stop building! And they always seem to leave some unsightly pieces of string, grass or any manner of other debris hanging from the entrance hole.

Sparrows build their nests almost anywhere. They have little preference as to cavity size, birdhouse height or location. About the only house they may not build in is one with too small of an entrance hole. You can use a tiny hole in your birdhouses, but the problem is that you likely eliminate not only sparrows but just about every other bird except wrens.

On the bright side, sparrows do have a cheerful chirp and they, along with other birds, do eat many harmful insects.

The other notable pest is the starling. These birds were first introduced into the United States around 1900. Like the sparrows, the starlings quickly proliferated in the entire lower 48 states.

The starling is considered a pest for several reasons. It is an aggressive bird that travels in large flocks. As such it can literally take over any area that has the food and shelter it requires. Like bullies, it drives out other species or worse yet, kills them with a single strike to the head with their sharp bill.

Like sparrows, starlings build nests almost anywhere: over doors or windows, on ledges, in tree cavities and, of course, in birdhouses.

The best way to discourage starlings from building in your birdhouse is to use a 1¼" (32mm) diameter or smaller entrance hole. Starlings cannot enter birdhouses with entrance holes less than 1½" (38mm) in diameter.

You can cut or drill the entrance hole as specified in the pattern drawings provided or, in some cases, alter the hole diameter to better accommodate certain species of birds. For example house wrens, brown-throated wrens and Bewick's wrens will nest in houses with a 1" (25mm) hole. Chickadees will nest in houses with a 1⅛" (29mm) hole (as will wrens). Birds preferring a 1¼" (32mm) diameter hole include the nuthatch, downy woodpecker, and titmouse. Some birds, including tree swallows and hairy woodpeckers, prefer a 1½" (38mm) hole (as do sparrows and starlings).

A guide to birdhouse sizes is provided in Appendix C. Remember that the dimensions given in this chart are suggestions based on experimentation and carefully observing birds. For thousands of years birds have been forced to search out nesting locations in the wild. Cavities left by woodpeckers or holes in rotted tree branches were among the choices available. Seldom do these natural cavities match precisely the cavity size and entrance hole diameter listed in the chart. The dimensions are valuable, however, because past experimentation has proven that wild birds are more likely to nest in man-made houses that match those dimensions. Suffice it to say that you never know which species might decide to move in. Part of the joy of providing bird feeders and birdhouses is waiting to see which birds finally select your yard to feed or to build their nest and raise their young.

Some birds, including robins, phoebes, and barn swallows, do not enter birdhouses. They prefer to build their nests on a shelf. Plans for a nesting shelf in the shape of a giant robin are included. In the wild, phoebes and barn swallows build nests in such places as rocky cliffs. Robins often build their nests on a tree limb. By providing a nesting shelf you may attract any of these birds. Attach the nesting shelf to the side of a building or to the trunk of a tree from 8 to 10 feet off the ground.

CARTOON KIDS BIRDHOUSES

EVERYONE LOVES THESE SILLY CARTOON HEAD BIRDHOUSES. The dictionary defines cartoon as "drawings often depicting something humorous." That would certainly apply to these humorous cartoon figures.

When designing these birdhouses, I considered simplicity of both construction and painting. All parts had to be easy to cut out and assemble. The painting had to be basic—no difficult decorative painting skills would be required of the builder.

The boy has a propeller on his hat that spins if the wind hits just right. The girl has a hat with colorful flowers. Both have faces that are simple to paint.

The cavity size is 4" x 4" (102 x 102mm) with a 1⅛" (29mm) hole. These houses attract nuthatches, titmice, and wrens. Outside dimensions are approximately 8"W (203mm) x 12"H (305mm).

PLAN OF PROCEDURE

These projects are constructed from ¼" (6mm) and ½" (13mm) exterior plywood and ¾" (19mm) lumber. After cutting and sanding, the front, back, sides, and tops are nailed and glued together. Use exterior wood glue.

The corners of the bottom pieces are cut at 45 degrees to allow for water drainage. The bottom piece should be attached with screws so it can be removed for cleaning. The bottom piece is the same for both projects. Although not shown, remember to drill ⅜" (10mm) air vent holes on the sides under the roof.

The top of the girl birdhouse is slanted to shed water. The top of the boy birdhouse is rounded for the same reason. The piece labeled "Boy Hat Top" is shown in the drawing as being one piece that is 1⅝" x 4½" x 5" (41 x 114 x 127mm). One way to make this piece is to cut a piece of wood to this size and then use a band saw to cut the top curved shape. Another way is to cut 6 pieces of ¾" (19mm) lumber to shape and then face-glue them together to obtain the 4-½" (114mm) width required.

Begin by cutting each of the parts as described below. Then assemble the projects according to the Final Assembly Instructions and as shown in the Assembly Drawings.

BOY

BOY NOSTRIL: Transfer the pattern onto ¼" (6mm) plywood and cut out. (Two pieces required.)

BOTTOM, BOY BACK: Lay out and cut to size from ½" (13mm) plywood.

BOY SIDE: Lay out and cut to size from ½" (13mm) plywood. (Two pieces required.)

BOY TOP: Transfer the pattern onto ½" (13mm) plywood and cut out.

BOY FRONT: Transfer the pattern onto ½" (13mm) plywood and cut out. Drill the 13/64" (5mm) diameter holes through for the eyes. Since shank diameters on plastic eyes vary between vendors it is best to test drill a hole in scrap wood to verify exact hole size needed. Drill the 1⅛"(29mm) entrance hole through. Hole locations are shown on the drawing of the Boy Front piece.

BOY NOSE: Transfer the pattern onto ¾" (19mm) stock and cut out.

BOY EAR: Transfer the pattern onto ¾" (19mm) stock and cut out. (Two pieces required.)

BOY HAT TOP: The drawings for this piece show a top and a front view. You can cut 6 pieces of ¾" (19mm) stock to the shape shown in the front view drawing, then face glue these pieces together, or you can face glue six pieces of 1⅝" x 5" (41 x 127mm) stock together first and use a band saw to cut the entire glue up to the face shown.

BOY DOWEL: Cut to length from ⅜" (10mm) dowel pin stock.

SANDING: Finish sand all parts.

FINAL ASSEMBLY:

Nail and glue the Boy Side pieces to the Boy Back piece. Attach the Boy Front piece to the assembly where shown on the drawing of the Boy Front piece. Attach the Bottom. (The Bottom piece should be attached with screws so it can be removed for cleaning.) Attach the Boy Top as shown in the assembly drawing. Attach the Boy Top Hat to the Boy Top. Attach the Boy Nostrils to the Boy Nose. Attach the Boy Nose to the Boy Front where shown on the drawing of the Boy Front piece. Attach the Ears where shown on the Boy Side piece. Glue the Boy Dowel in the ⅜" (10mm) hole in the Boy Top Hat. Do not attach the Propeller or the Plastic Eyes until after painting.

PAINTING: Paint color recommendations are shown on each of the parts. The top view of the Box Top Hat shows the paint scheme used. A black medium tip paint marker was used to highlight the mouth lines, the white areas surrounding the eyes and the hair.

GIRL

GIRL NOSTRIL: Transfer the pattern onto ½" (13mm) plywood and cut out. (Two pieces required.)

GIRL FLOWER: Transfer the pattern onto ¼" (6mm) plywood and cut out. The Flowers are identical in size but are painted different colors. (Two pieces required.)

BOTTOM, GIRL TOP: Lay out and cut to size from ½" (13mm) plywood.

GIRL SIDE: Lay out and cut to size from ½" (13mm) plywood. (Two pieces required.)

GIRL BACK: Lay out and cut to size from ½" (13mm) plywood. Cut the 25° bevel.

GIRL FRONT: Transfer the pattern onto ½" (13mm) plywood and cut the 25° bevel. Cut to final shape. Drill the 19⁄64" Dia. holes through for the eyes. Since shank diameters on plastic eyes vary between vendors it is best to test drill a hole in scrap wood to verify exact hole size needed. Drill the 1 1⁄4" (29mm) entrance hole through. Hole locations are shown on the drawing of the Girl Front piece.

GIRL NOSE: Transfer the pattern onto ¾" (19mm) stock and cut out.

GIRL EAR, GIRL HAIR: Transfer the pattern onto ¾" (19mm) stock and cut out. (Two pieces required.)

GIRL TOP HAT: Lay out and cut to size from ¾" (19mm) stock.

GIRL DOWEL: Cut to length from ¼" (6mm) dowel stock. (Two pieces required.)

SANDING: Finish sand all parts.

FINAL ASSEMBLY:

Nail and glue the Girl Side pieces to the Girl Back piece. Attach the Girl Front piece to the assembly where shown on the drawing of the Girl Front piece. Attach the Bottom. (The Bottom piece should be attached with screws so it can be removed for cleaning.). Glue the Girl Nostrils to the Girl Nose. Glue the Girl Nose to the Girl Front where shown on the drawing of the Girl Front piece. Glue the Ears to the Girl Side pieces. Attach the Girl Top as shown in the assembly drawing. Drill two ¼" (6mm) diameter x ¼" (6mm) deep holes in the Girl Top for the dowels. The project looks best if you drill the holes at slight angles and far enough apart so the Flowers don't come in contact with each other. Glue the dowels in the Girl Top piece, but do not glue the Girl Flower pieces to the dowels until after they have been painted. Attach the Girl Top Hat to the Girl Top. Insert the Plastic Eyes (after painting).

FINISHING: Paint color recommendations are shown on each of the parts. The Girl Dowels were painted green. A black medium tip paint marker was used to highlight the facial lines. It was also used along the bottom edge of the hairline so the yellow hair will be set apart from the face, and around the white areas surrounding the eyes and to outline the lips. The edge of the Girl Hat Top piece was painted red.

BILL OF MATERIALS

BOY

QTY.	PART	SIZE OF MATERIAL
2	Boy Nostril	¼" x ½" x ¾" (6 x 13 x 19mm)
1	Bottom	½" x 4" x 4" (13 x 102 x 102 mm)
2	Boy Side	½" x 4" x 7⅞" (13 x 102 x 200mm)
1	Boy Back	½" x 5" x 7⅞" (13 x 127 x 200mm)
1	Boy Top	½" x 5" x 6¾" (13 x 127 x 171mm)
1	Boy Front	½" x 7⅞" x 8¾" (13 x 200 x 222mm)
1	Boy Nose	¾" x ¾" x 1⅜" (19 x 22 x 35mm)
2	Boy Ear	¾" x ¾" x 1⅜" (19 x 22 x 35mm)
1	Boy Hat Top	1⅝" x 4½" x 5" (41 x 114 x 127mm)
1	Boy Dowel	¼" Dia. x 1" (10 Dia. x 25mm)
*1	Red Propeller	(#6005)
1	Nail	⅞" (22mm) x 18 Gauge
*2	Plastic Eye	⅜" (10 mm) (#8627)

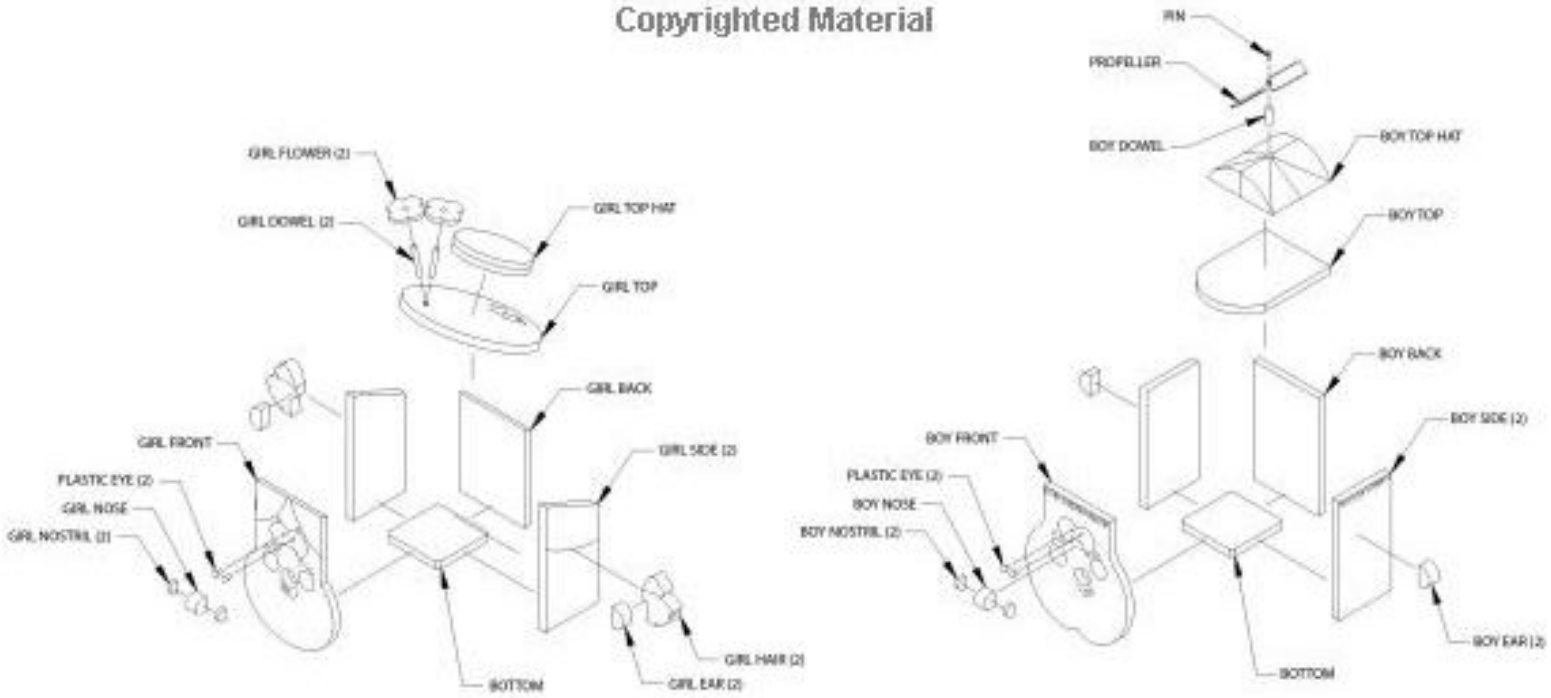
GIRL

QTY.	PART	SIZE OF MATERIAL
2	Girl Nostril	¼" x ⅝" x ¾" (6 x 16 x 19mm)
2	Girl Flower	½" x 2¼" x 2¼" (13 x 57 x 57mm)
1	Bottom	½" x 4" x 4" (13 x 102 x 102mm)
2	Girl Side	½" x 4" x 8⅜" (13 x 102 x 213mm)
1	Girl Back	½" x 5" x 6⅜" (13 x 127 x 153mm)
1	Girl Top	½" x 8" Dia. (13mm x 203mm Dia.)
1	Girl Front	½" x 6⅞" x 9⅝" (13 x 175 x 248mm)
1	Girl Nose	¾" x ⅞" x 1" (19 x 22 x 25mm)
2	Girl Ear	¾" x ⅞" x 1⅜" (19 x 22 x 35mm)
2	Girl Hair	¾" x 2⅜" x 3¼" (19 x 60 x 83mm)
1	Girl Hat Top	¾" x 4½" Dia. (19 x 114mm Dia.)
2	Girl Dowel	¼" Dia. x 2" (6 mm Dia. x 51mm)
*2	Plastic Eye	⅜" (10mm) (#8627)

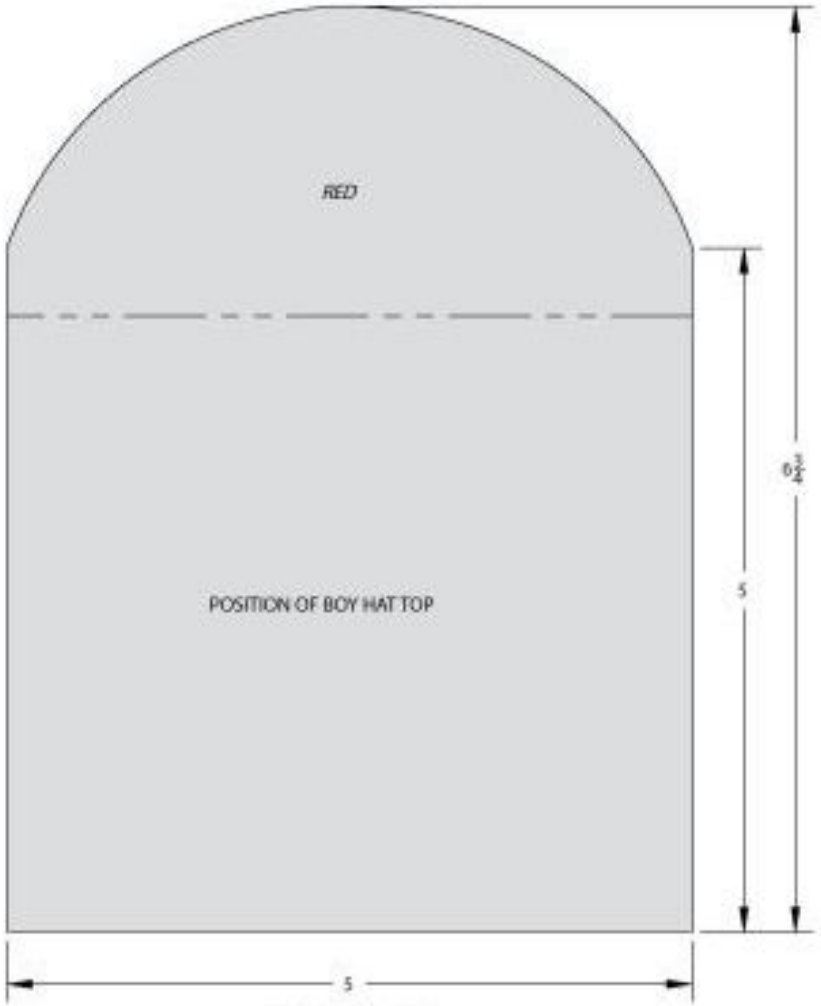
PAINT

Exterior Acrylic Latex Primer and Gloss or Semi-Gloss Exterior Acrylic Latex paint is recommended. A Black Paint Marker was used for all detail work.

QTY.	GENERIC COLOR
1	White, Red, Yellow, Blue, Green, Flesh
1	Black Paint Marker Medium Line



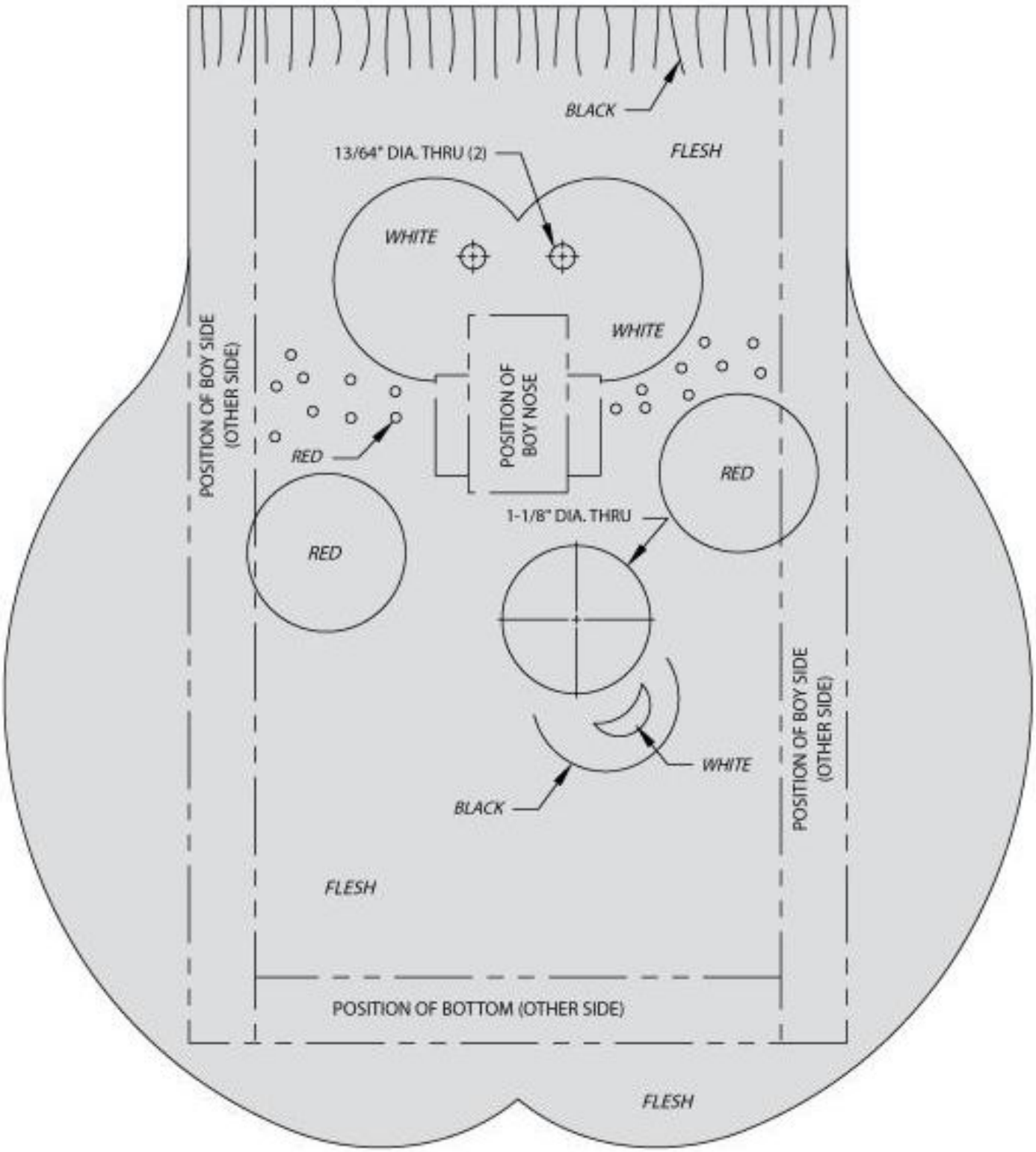
ASSEMBLY DRAWING



BOY TOP

½" X 5" X 6¾"

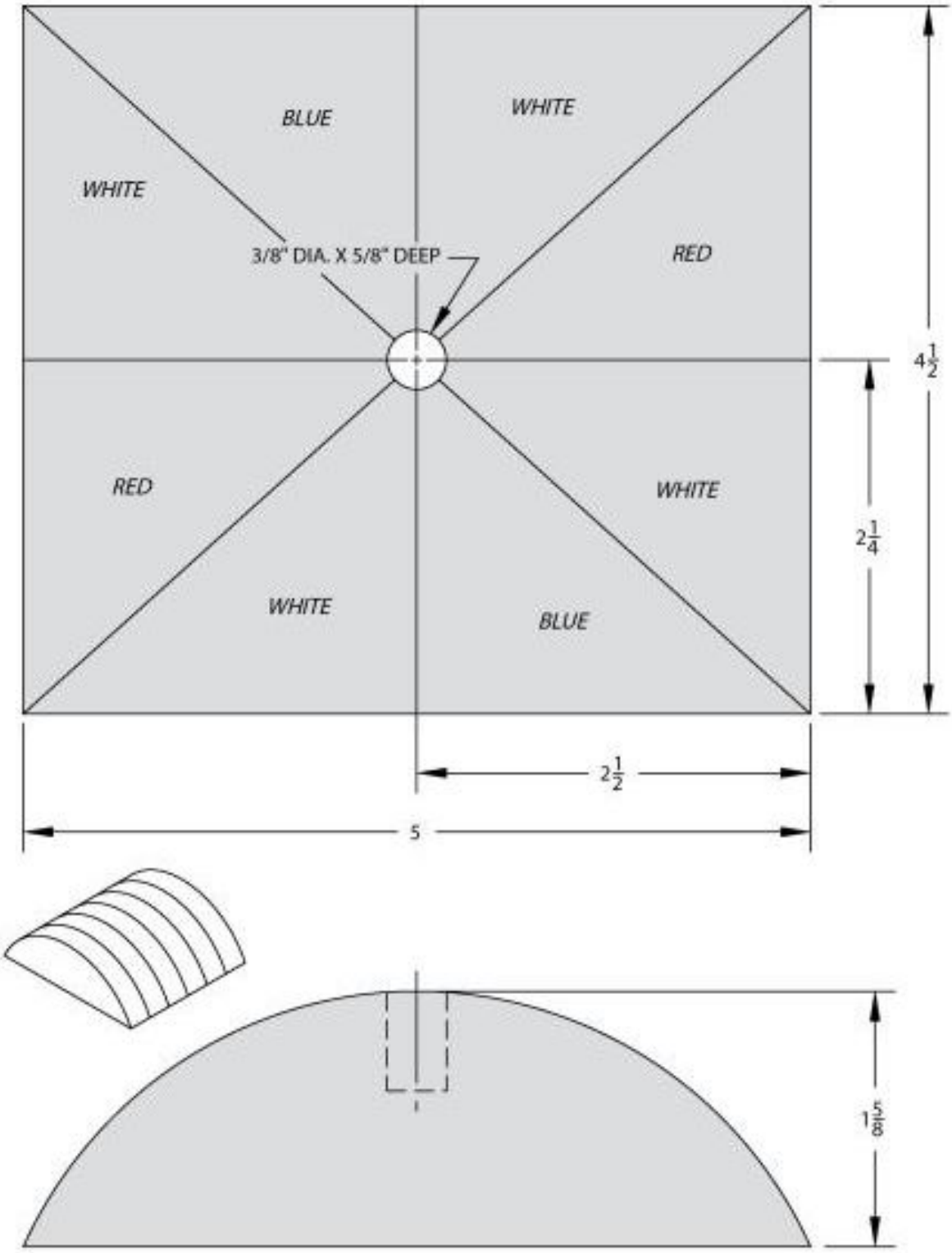
ENLARGE PATTERN 140%



BOY FRONT

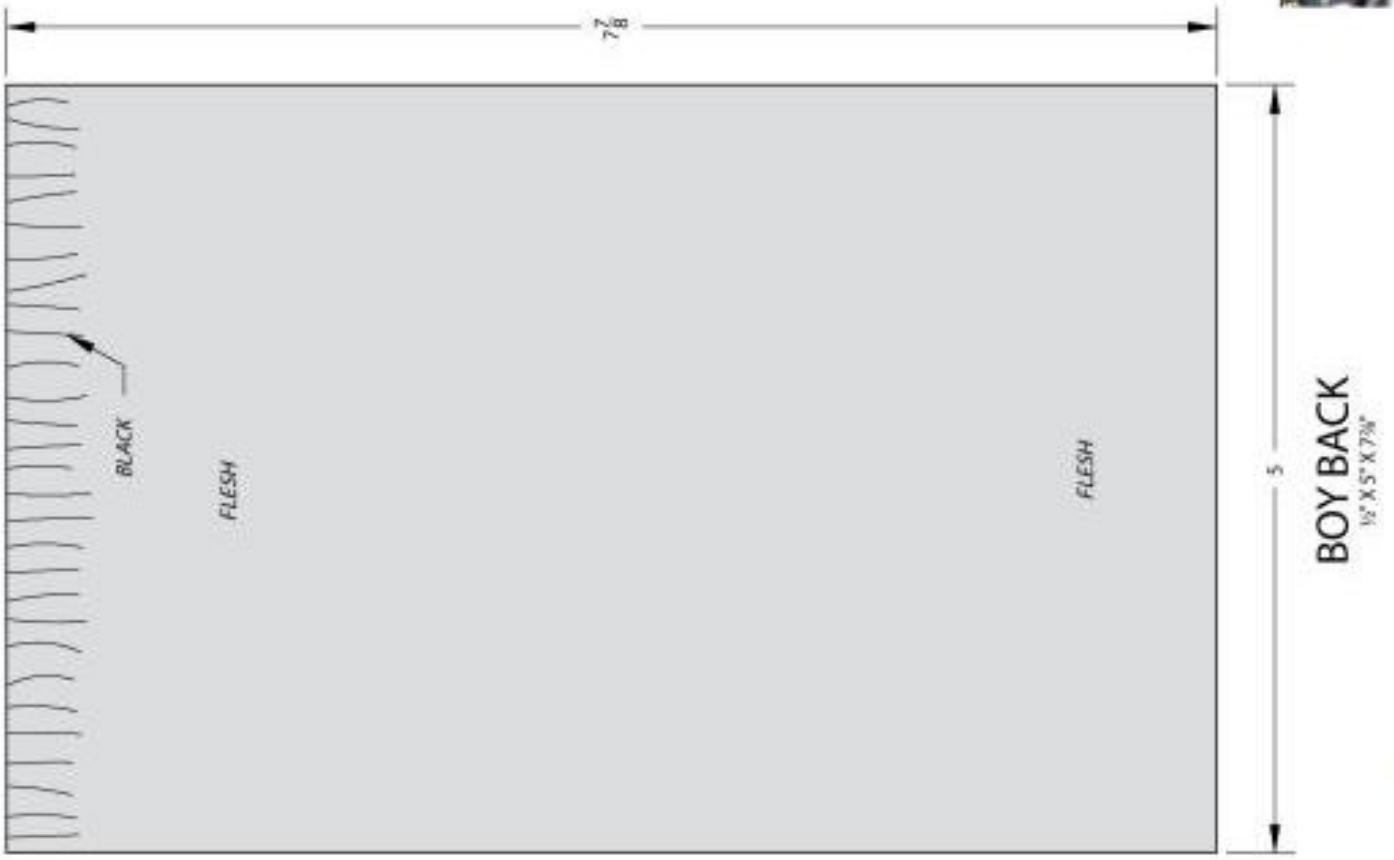
½" X 7¾" X 8¾"

ENLARGE PATTERN 110%

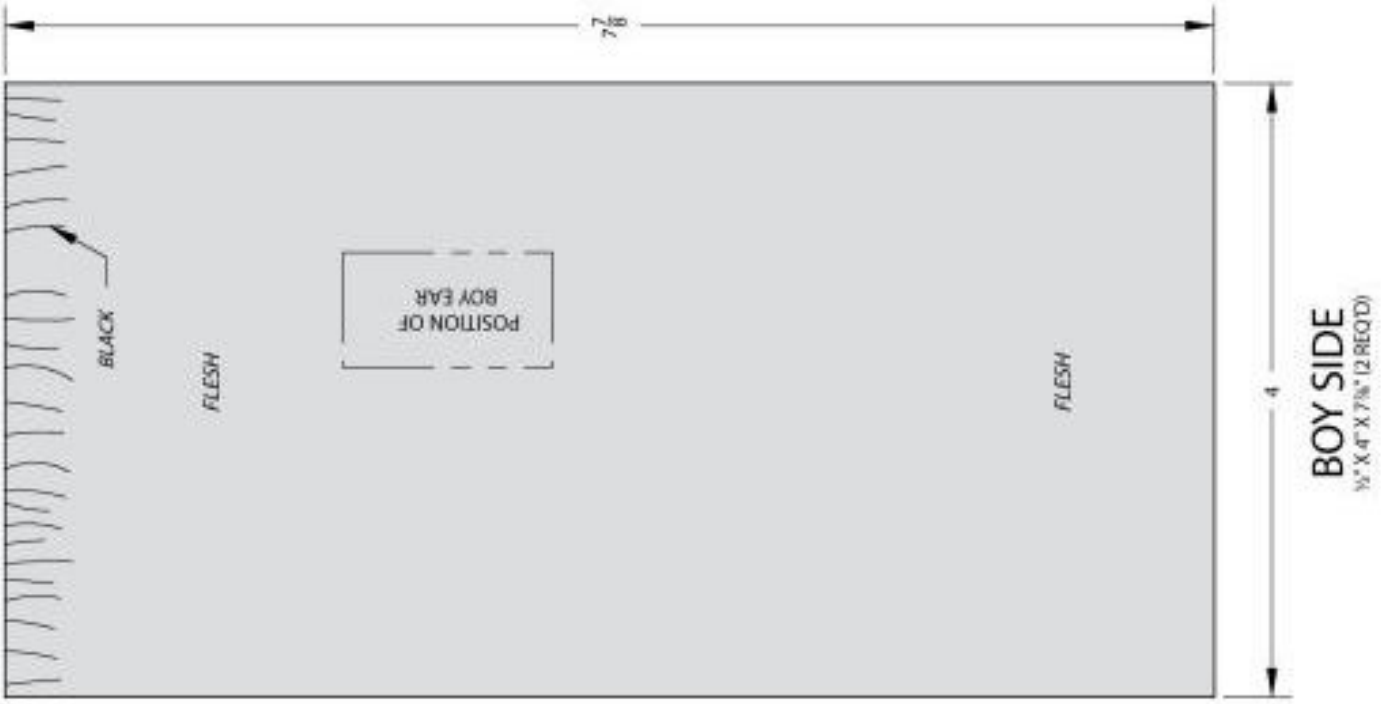


BOY HAT TOP

1¾" X 4½" X 5"

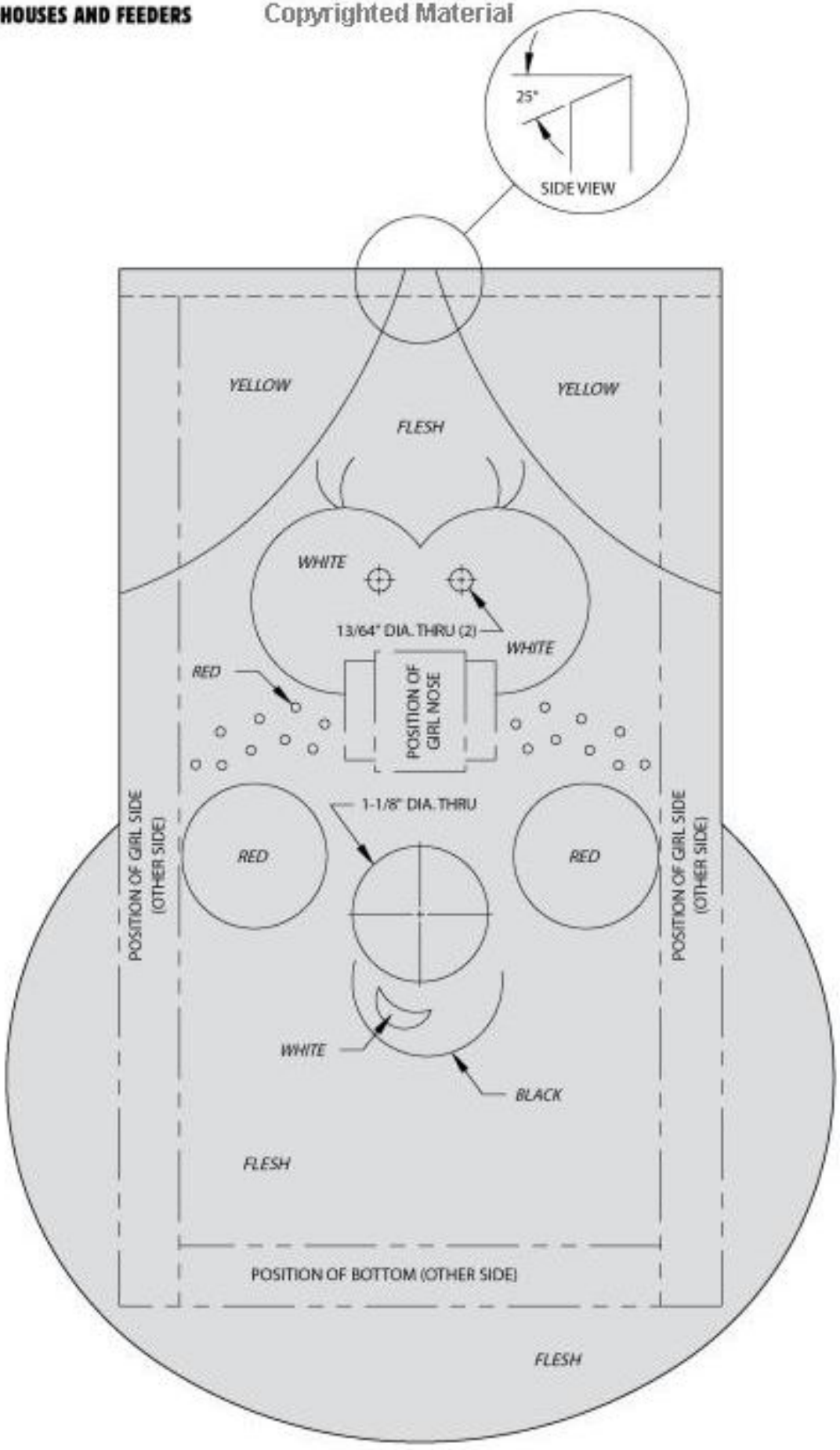


BOY BACK
½" X 5" X 7⅞"



BOY SIDE
½" X 4" X 7⅞" (2 REQ'D)

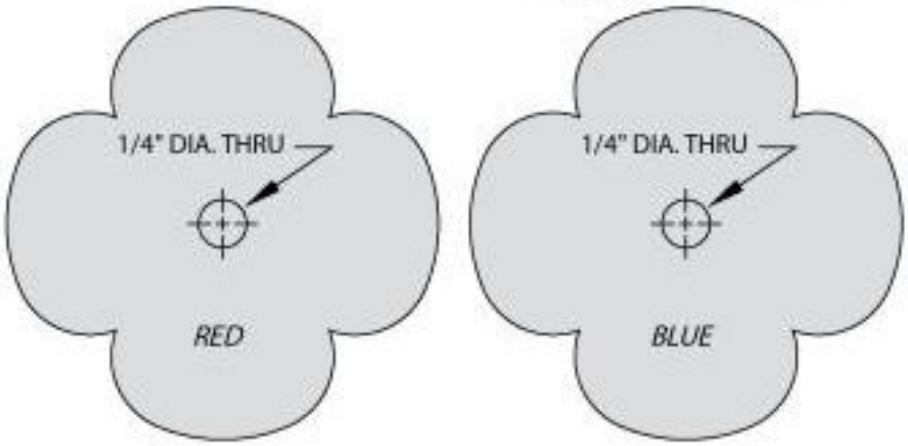
ENLARGE PATTERNS 125%



GIRL FRONT

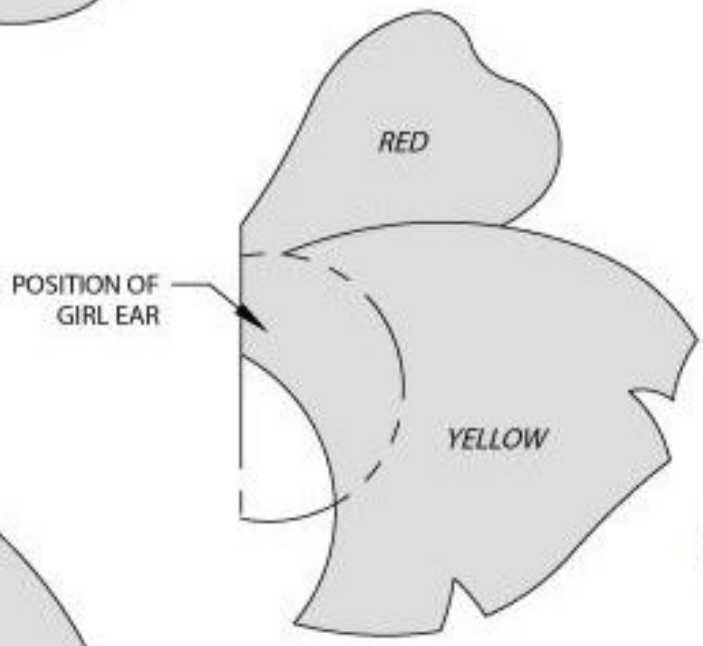
½" X 6⅛" X 9¼"

ENLARGE PATTERN 125%



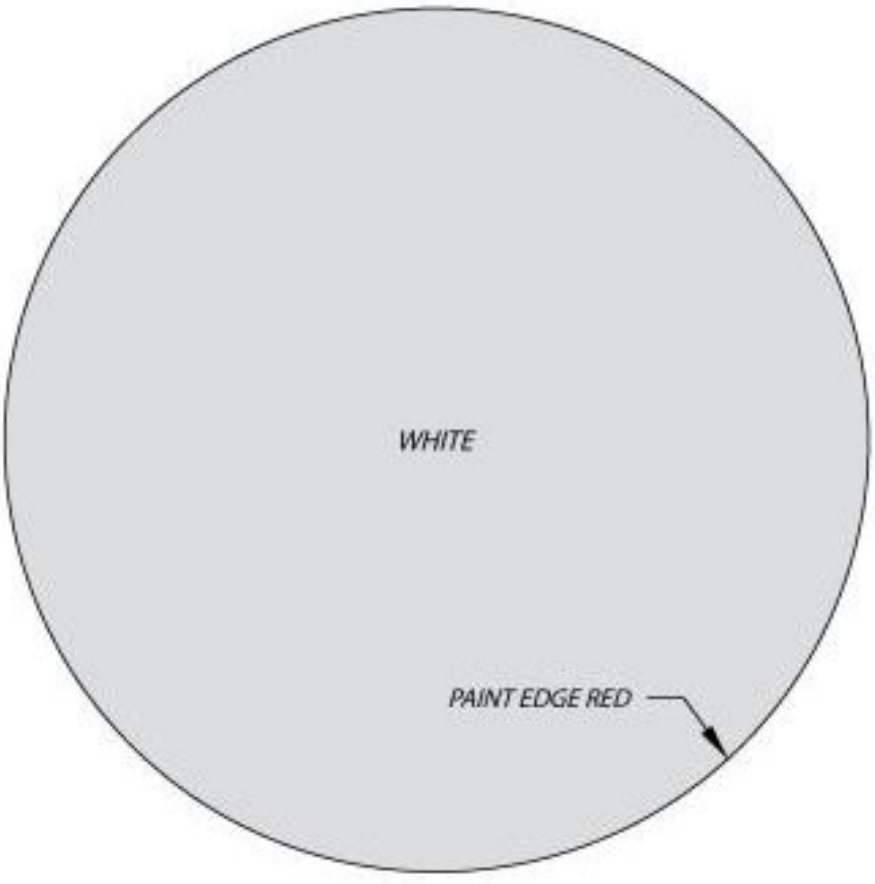
GIRL FLOWER

½" X 2¼" X 2¼" (2 REQ'D)



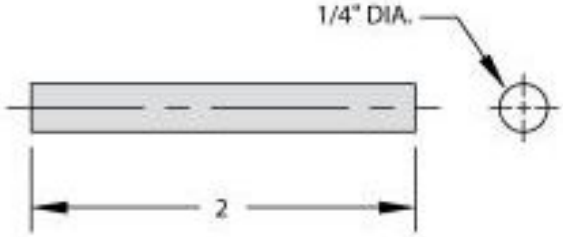
GIRL HAIR

¾" X 2⅛" X 3¼" (2 REQ'D)



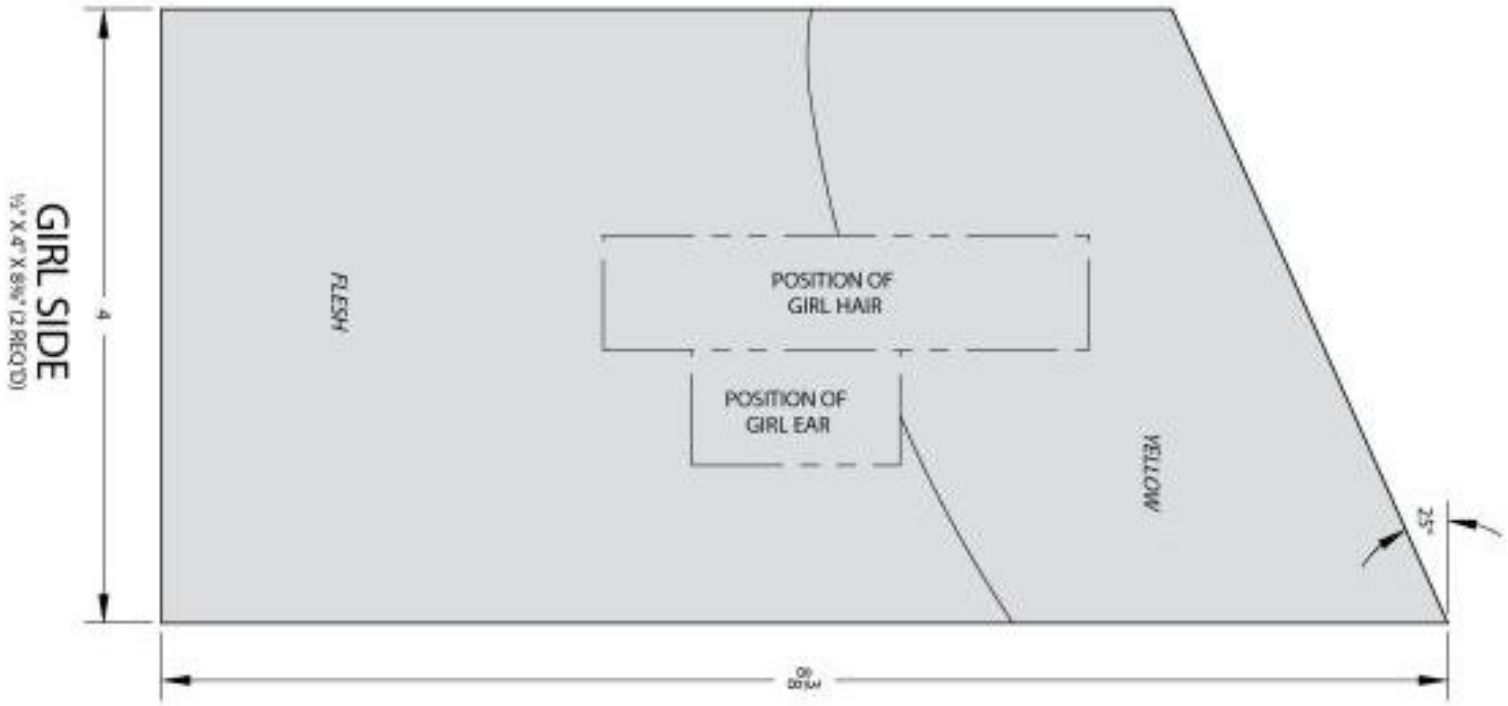
GIRL HAT TOP

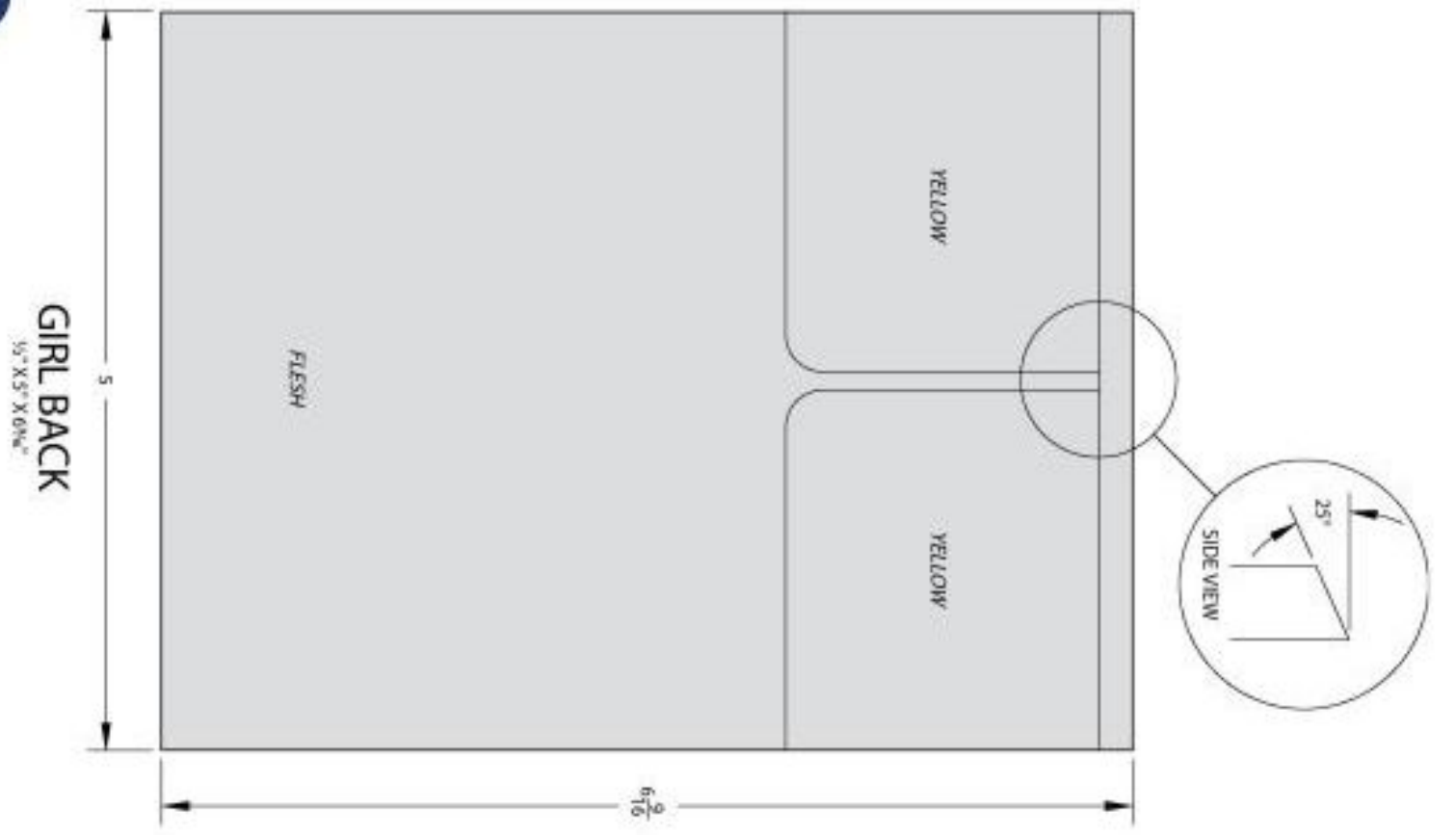
¾" X 4½" DIA.



GIRL DOWEL

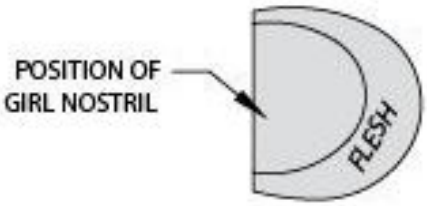
¼" DIA. X 2" (2 REQ'D)





ENLARGE PATTERNS 125%

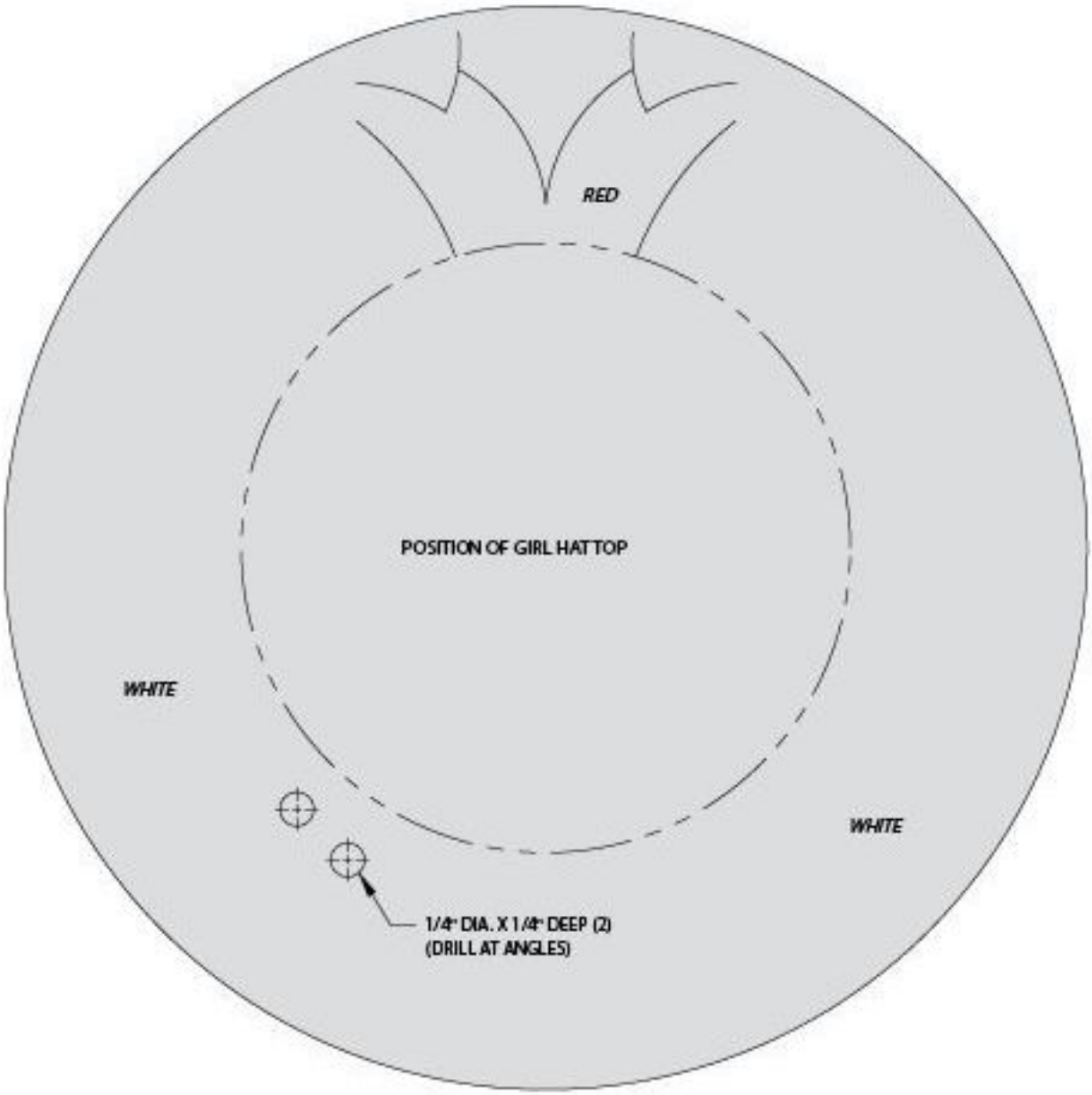
GIRL EAR
3/8" X 7/8" X 1 7/8" (2 REQ'D)



GIRL NOSE
1/2" X 7/8" X 1"

GIRL NOSTRIL
1/4" X 5/8" X 3/4" (2 REQ'D)

PATTERNS AT 100%



GIRL TOP
15" X 8" DIA.

ENLARGE PATTERN 125%

BLUEBIRD ABODE BIRDHOUSE

THIS PROJECT IS DESIGNED WITH THE FEATURES NECESSARY TO ATTRACT BLUEBIRDS. It takes on the shape of a large colorful bluebird and meets size and shape recommendations. The bright colors do not prevent the bluebirds from nesting in this house. In fact, this house is based on a design by Andrew Troyer, which is proven to attract bluebirds and discourage sparrows. Make it from ¾" (19mm) and 1½" (38mm) stock.

The outside of the project is painted in bright colors using exterior acrylic latex paint. Suggested paint colors are listed on the individual parts drawings.

PLAN OF PROCEDURE

This bluebird house can be made from standard 2" x 6" (51 x 152mm) and 1" x 10" (25 x 254mm) stock. See the Cutting Diagram for amounts of material needed.

The Front is hinged at the bottom on two nails. The top of the Front is latched with a Loose Pin, which can be a nail that is bent over as shown on step 2 of the assembly drawing. A pin can be placed on one or both sides. Pulling the pin(s) opens the Front to examine the inside cavity. The holes are called out in the drawing of the Side piece as being 5/16" (2mm). This size varies depending on the diameter of the nail you're using. The holes in the Side pieces should be slightly larger than the diameter of the nails. Pre-drill the nail holes in the bottom of the Front piece with a bit smaller than the nail's diameter. Slip the two nails used to hinge the Front through the lower holes in the Side pieces and then pound them into the Front piece. The Loose Pin(s) at the top should be easily removed. Drill the hole(s) through the outside of the Side piece(s) and into the Front piece. These holes must be slightly larger so you can remove the nail with your fingers for checking on eggs or baby birds.

The Tray piece holds wood shavings. It is not attached to the inside so it can easily be removed for cleaning. A 2 3/8" (60mm) diameter Forstner bit should be used for drilling the hole in the Tray piece (See Appendix A for source).

Except for the door attachment, assembly can be done using finishing nails and exterior glue.

Begin by cutting each of the parts as described below. Then assemble the project according to the Final Assembly instructions and as shown in the Assembly Drawing.

FLOOR, FRONT: Lay out and cut to size from ¾" (19mm) stock. Cut the 15° bevel.

CEILING: Lay out and cut to size from ¾" (19mm) stock.

SIDE: Lay out and cut to size from ¾" (19mm) stock. Drill the 5/16" (2mm) diameter and ¼" (6mm) diameter ventilation holes through. (Two pieces required.)

ROOF: Lay out and cut to size from ¾" (19mm) stock. Cut the ⅛" (3mm) wide x ⅛" (3mm) deep rain drip grooves.

TAIL: Cut the ¾" (19mm) stock to rough shape and cut the 45-degree bevel. Then transfer pattern and cut to size.

WING: Transfer the pattern onto ¾" (19mm) stock and cut out. Drill the ¼" (6mm) diameter ventilation holes through to match the Side pieces. (Two pieces required.)

FOOT: Transfer the pattern onto 1½" (38mm) stock and cut out. (Two pieces required.)

HEAD: Transfer the pattern onto 1½" (38mm) stock and cut out. Drill the ¼" (6mm) diameter hole through for the Plastic Eyes.

GUSSET: Lay out and cut to size from 1½" (38mm) stock. Cut the 45° bevel. (Two pieces required.)

TRAY: Lay out and cut to size from 1½" (38mm) stock. Cut the 15° bevel. Drill the 2 3/8" (60mm) diameter x 1" (25mm) deep hole.

BACK: Lay out and cut to size from 1½" (38mm) stock.

FINAL ASSEMBLY:

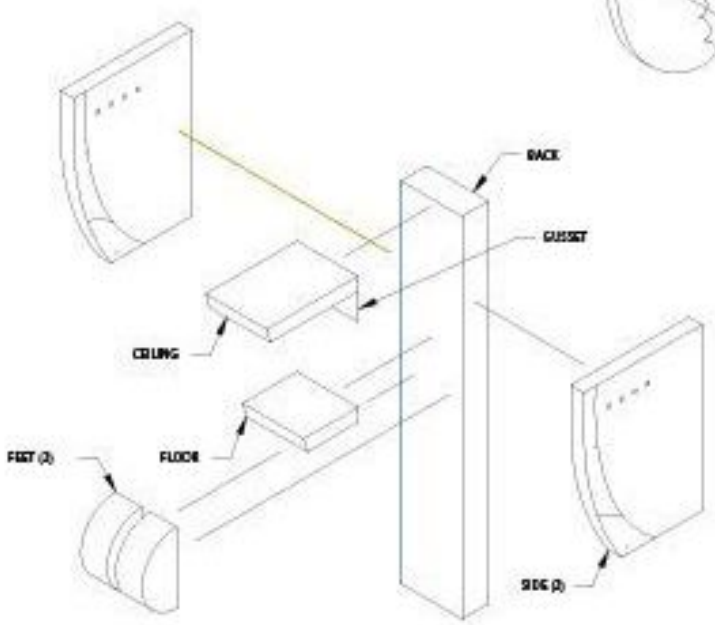
STEP 1: Attach the Sides to the Back. Attach the Gusset to the Ceiling. Attach the Floor and Ceiling to the Sides in the position shown on the drawing of the Side piece. Attach the Feet to the Back.

STEP 2: Place the Front between the Side pieces as shown on the drawing of the Side piece. The top of the Front piece should be from 1 3/16" (30mm) to 1 ¼" (32mm) from the bottom of the Ceiling piece. It is called out at 1 ¼" (32mm) on the drawing of the Side piece. Drive two 7-penny nails through the bottom holes in the Side piece and into the Front piece to act as a hinge. Insert bent 7-penny nail(s) in the top to act as a latch. (Aluminum pop rivets can be substituted.) Attach the Wings to the Sides. Attach the Tail and remaining Gusset to the Back.

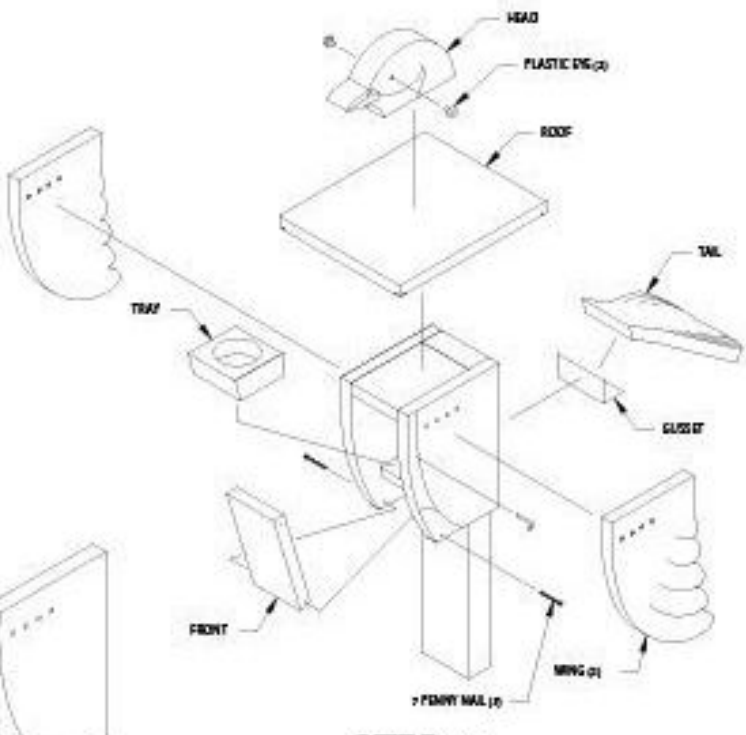
Attach the Head to the Roof where shown (Insert Plastic Eyes after painting). Attach the Roof to the assembly. Place the Tray on the Floor piece. Do not attach the Tray as it should be removable for cleaning. Fill Tray with nesting material such as wood shavings.

Mount the house to a steel fence post, a piece of one-inch or larger steel electrical conduit, or a round pipe. A steel fence post is preferred. If using round pipe or tubing, be sure the house does not rotate. Attach the house to the fence post with plumber's pipe strap cut in two pieces about six inches (152mm) long. Place the back of the house against the post, wrap the pipe strap around the post, and secure each end to the back of the house with a wood screw. Two straps are sufficient.

FINISHING: All parts should be primed with white acrylic latex primer and top-coated with exterior acrylic latex paint. See parts drawings for recommended colors. The Hood Top and Side pieces should be painted the same color. The Side, Top, and Back are the same color as the Front. Do not paint the inside of the project.



STEP #1



STEP #2

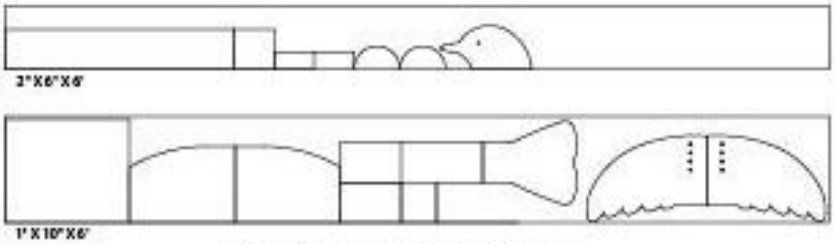
BILL OF MATERIALS

QTY.	PART	SIZE OF MATERIAL
1	Floor	¾" x 3½" x 3½" (19 x 79 x 89mm)
1	Ceiling	¾" x 3½" x 5¼" (19 x 89 x 133mm) (not shown)
1	Front	¾" x 3⅞" x 7¾" (19 x 87 x 197mm)
2	Side	¾" x 6¾" x 9¼" (19 x 171 x 235mm)
1	Roof	¾" x 9" x 10⅞" (19 x 229 x 276mm)
1	Tail	¾" x 7⅜" x 8¼" (19 x 187 x 210mm)
2	Wing	¾" x 7⅝" x 10½" (19 x 194 x 267mm)
2	Foot	1½" x 2" x 4" (38 x 51 x 102mm)
1	Head	1½" x 3-⅞" x 8" (38 x 100 x 203mm)
2	Gusset	1½" x 1½" x 3½" (38 x 38 x 89mm)
1	Tray	1½" x 3½" x 3½" (38 x 89 x 89mm)
1	Back	1½" x 3½" x 20" (38 x 89 x 508mm) (not shown)
3	Nail	7 Penny
1	Steel Fence Post	8 Feet (2.44m)
*2	Plastic Eye	19/32" Dia. (#9437)

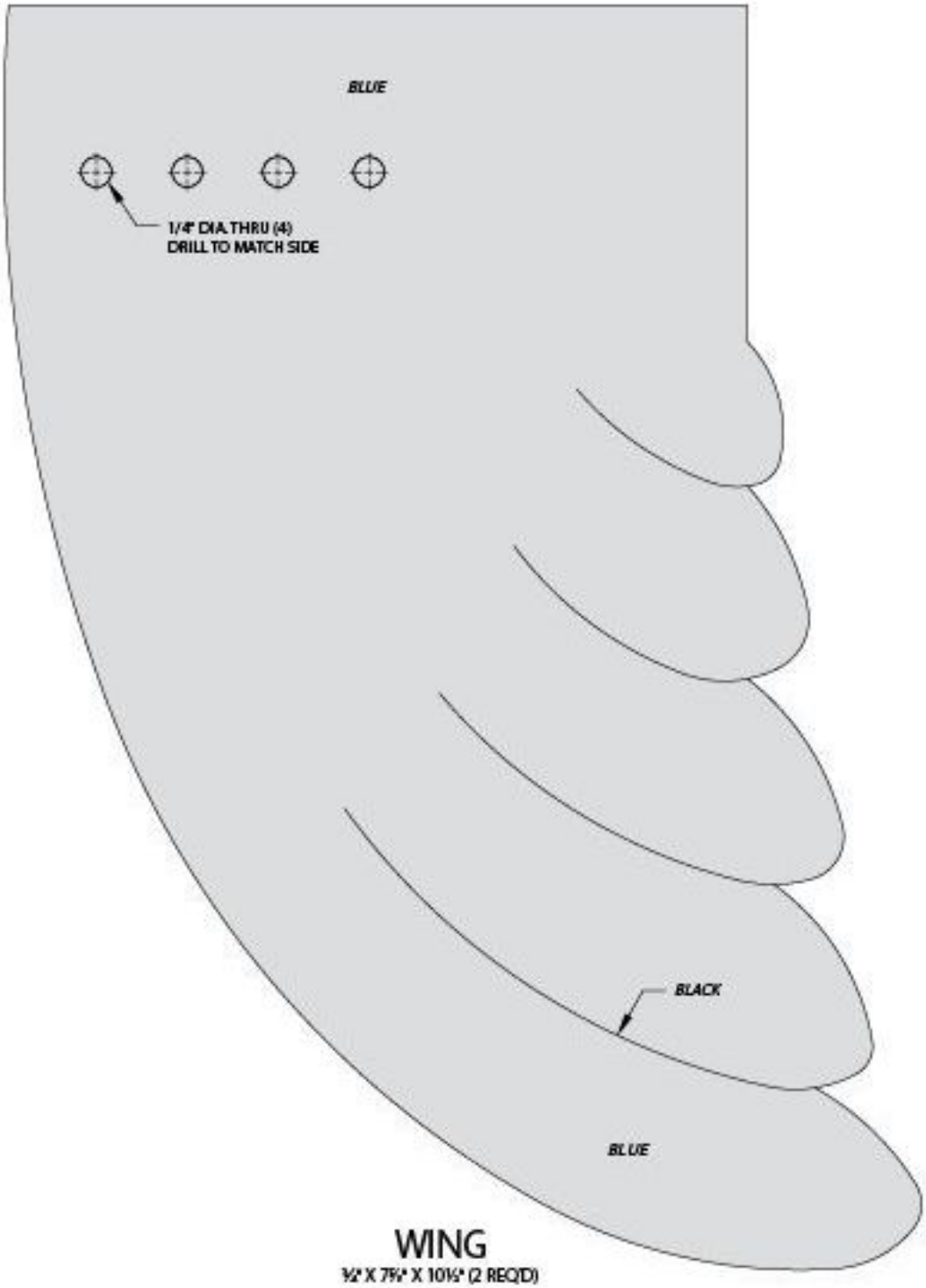
PAINT

Exterior Acrylic Latex Primer and Gloss or Semi-Gloss Exterior Acrylic Latex paint is recommended.

QTY.	GENERIC COLOR
1	Black, White, Orange, Blue



CUTTING DIAGRAM

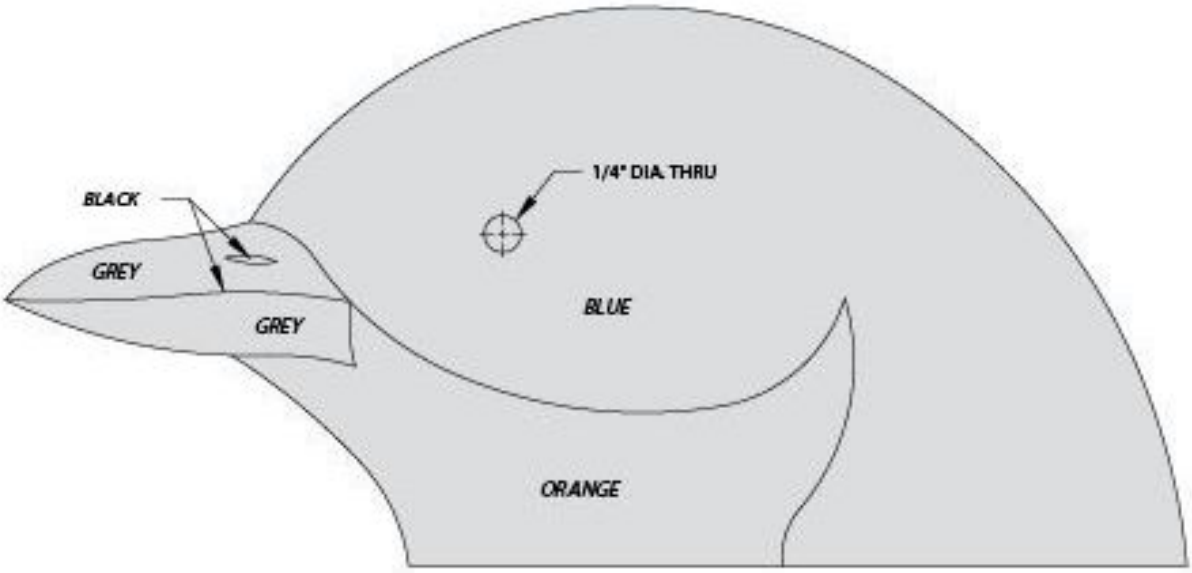


WING

½" X 7⅞" X 10½" (2 REQ'D)

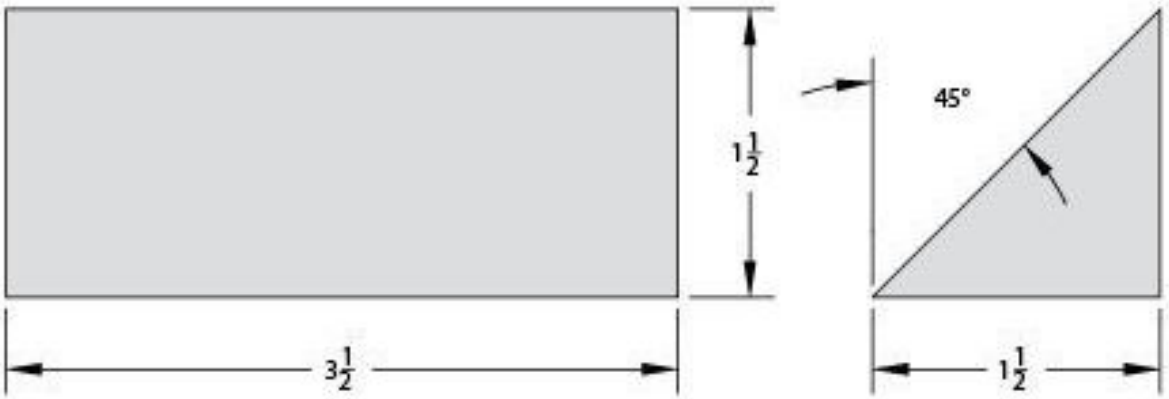
ENLARGE PATTERN 140%

FOOT
1½" X 2" X 4" (2 REQ'D)



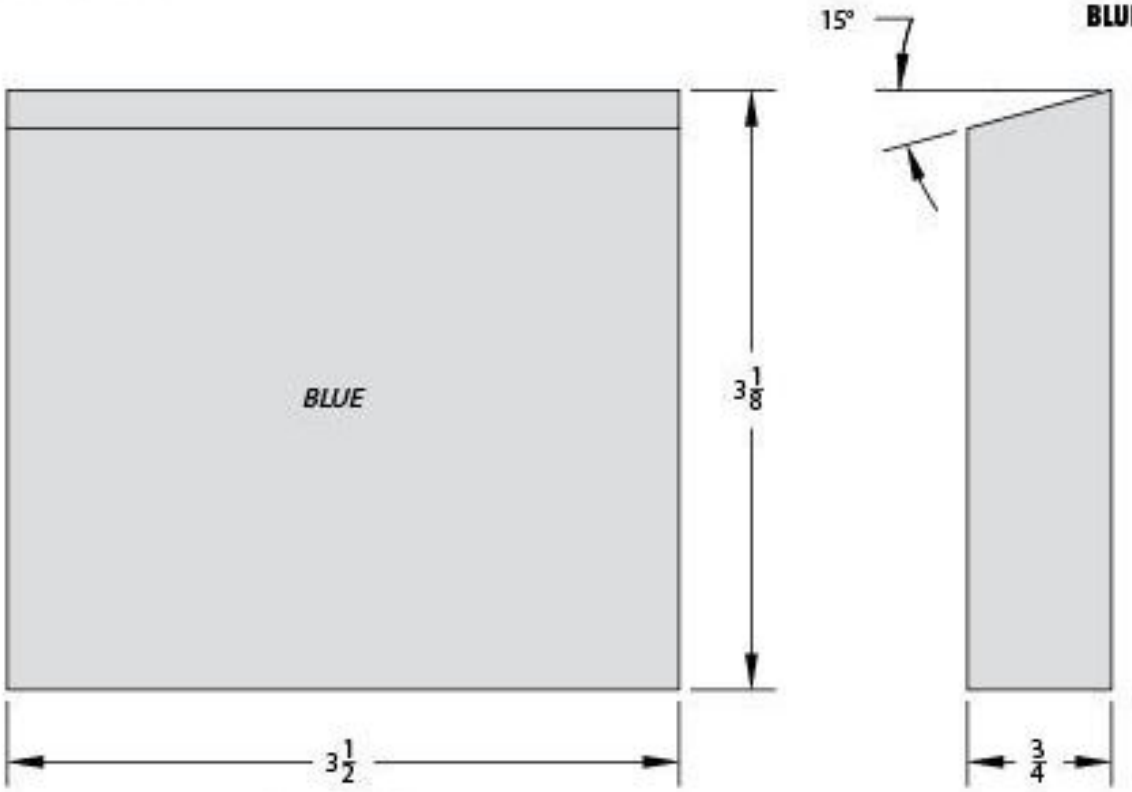
HEAD
1½" X 3⅝" X 8"

ENLARGE PATTERNS 130%



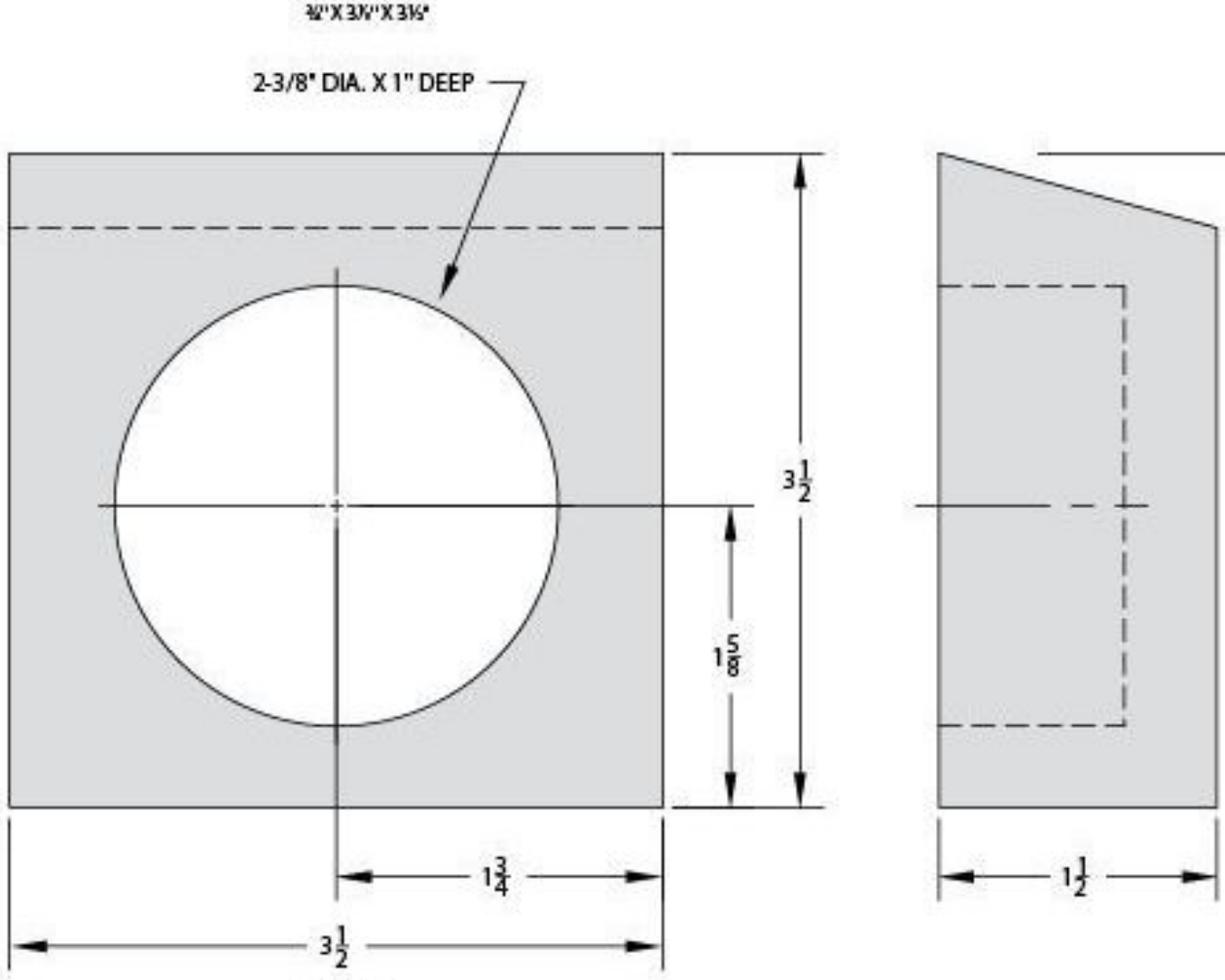
GUSSET
1½" X 1½" X 3½" (2 REQ'D)

PATTERN AT 100%



FLOOR

¾" X 3½" X 3½"



TRAY

1½" X 3½" X 3½"

PATTERNS AT 100%

BIRD HOUSE

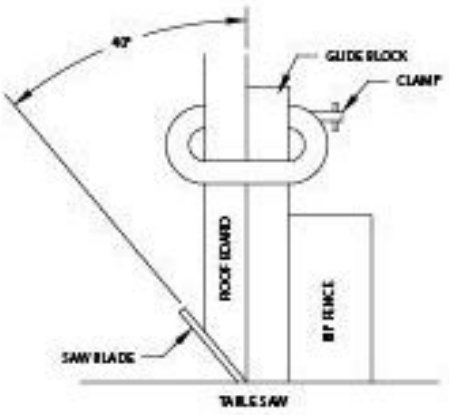
BEAR BIRDHOUSE

IT'S AMAZING HOW A FEW SIMPLE DETAILS CREATE A CREATURE WITH THE FRIENDLY CHARM AND CHARISMA OF THIS BEAR.

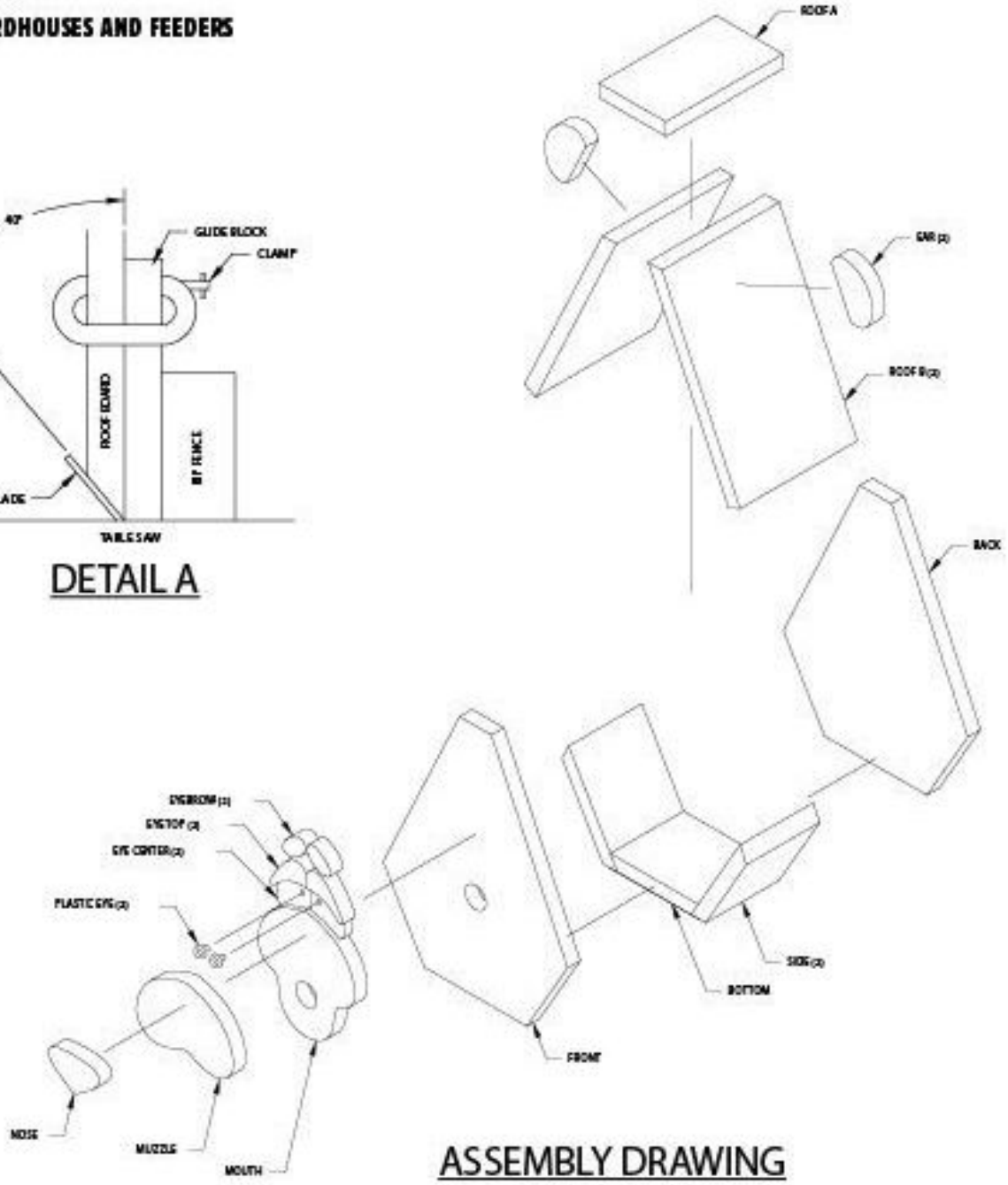
Think of it as a birdhouse with personality!

This project is made from cedar, which I chose for its natural color and rustic texture. The large cavity size is suitable for a wide variety of birds. Nuthatches and titmice like the 1¼" (32mm) diameter entrance hole. Enlarging the hole attracts finches, flycatchers, swallows, and possibly bluebirds or woodpeckers.

The finished project measures 13" (330mm) W x 8" (203mm) D x 15" (381mm) H.



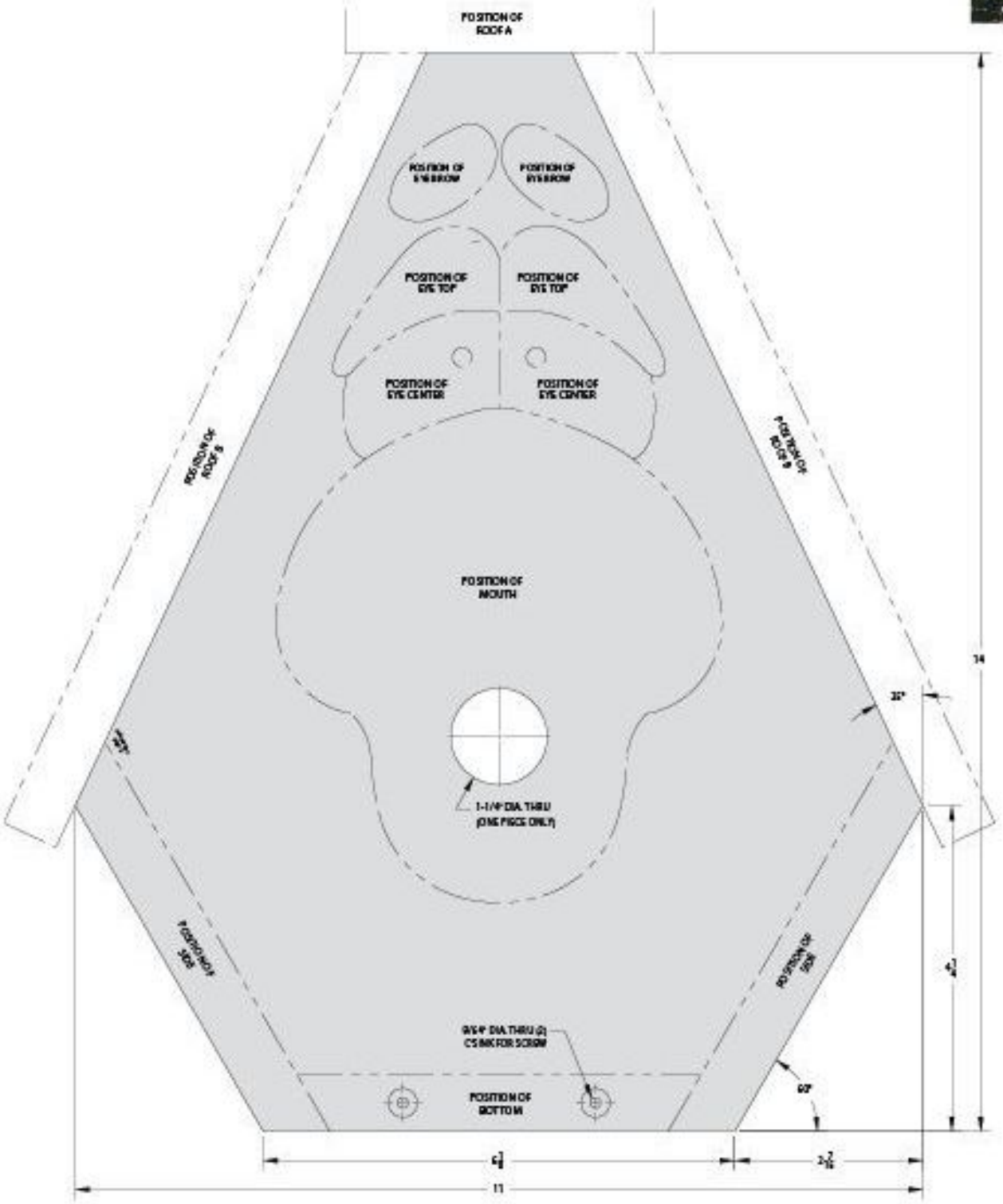
DETAIL A



ASSEMBLY DRAWING

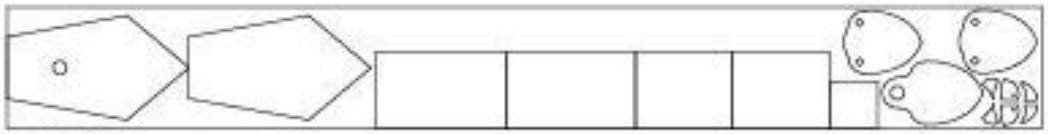
BILL OF MATERIALS

QTY.	PART	SIZE OF MATERIAL
2	Eye Center	½" x 2" x 2" (13 x 51 x 51mm)
1	Nose	½" x 2" x 3⅛" (13 x 51 x 79mm)
2	Eyebrow	¾" x 1¼" x 1⅜" (19 x 32 x 35mm)
2	Eye Top	¾" x 2" x 2¼" (19 x 51 x 57mm)
2	Ear	¾" x 1⅞" x 3⅜" (19 x 48 x 86mm)
1	Muzzle	¾" x 4" x 5⅞" (19 x 102 x 149mm)
1	Mouth	¾" x 5⅞" x 6½" (19 x 149 x 165mm)
1	Bottom	¾" x 4⅜" x 5¼" (19 x 111 x 133mm)
2	Side	¾" x 4⅜" x 5 ⅞" (19 x 111 x 148mm)
1	Roof A	¾" x 4" x 7" (19 x 102 x 178mm)
2	Roof B	¾" x 7" x 11⅜" (19 x 178 x 289mm)
2	Front/Back	¾" x 11" x 14" (19 x 279 x 356mm)
*2	Plastic Eye	1⅛" (24mm) Dia. (#9915)
Misc.	Flat Head Exterior Screw	1¼" (32mm) x #6



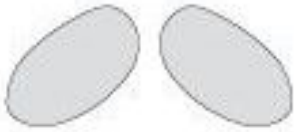
FRONT/BACK
½" X 11" X 14" (2 REQ'D)

ENLARGE PATTERN 200%



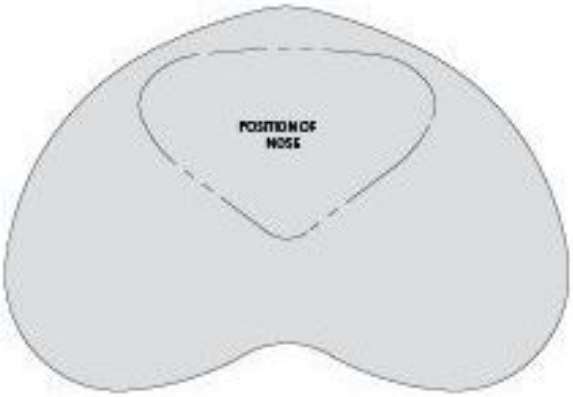
CUTTING DIAGRAM

EYE TOP
¾" X 2" X 2½" (2 REQ'D)

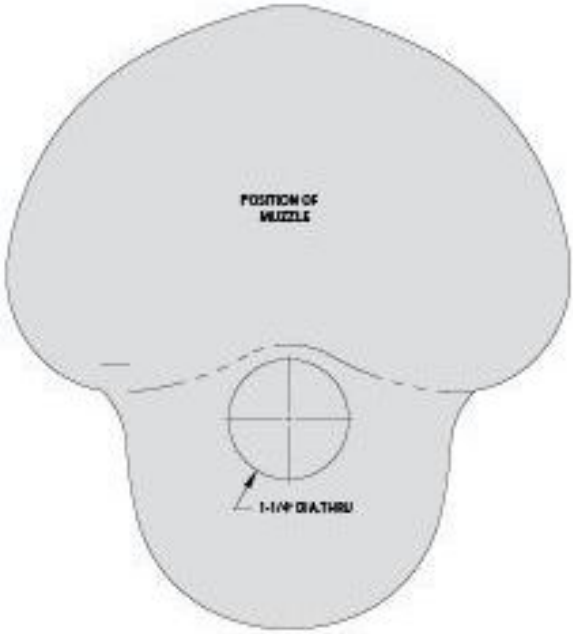


EYEBROW
½" X 1¼" X 1⅞" (2 REQ'D)

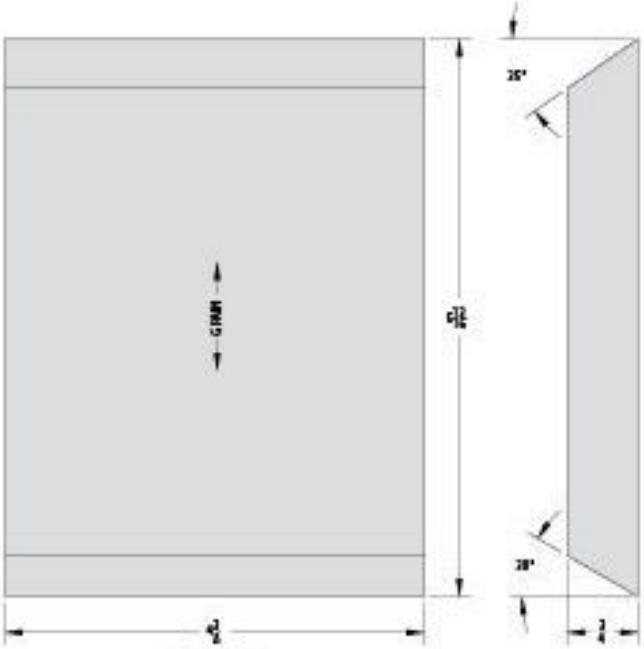
NOSE
1½" X 2" X 3¼"



MUZZLE
¾" X 4" X 5⅞"



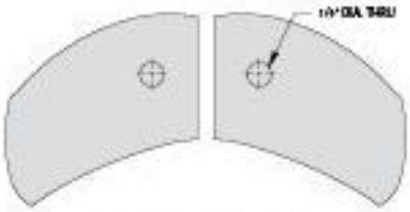
MOUTH
¾" X 5¾" X 6½"



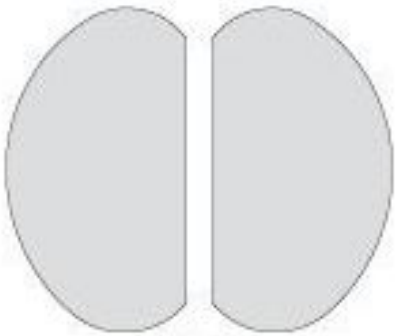
SIDE
¾" X 4½" X 5 ⅞" (2 REQ'D)

ROOF A
¾" X 4" X 7"

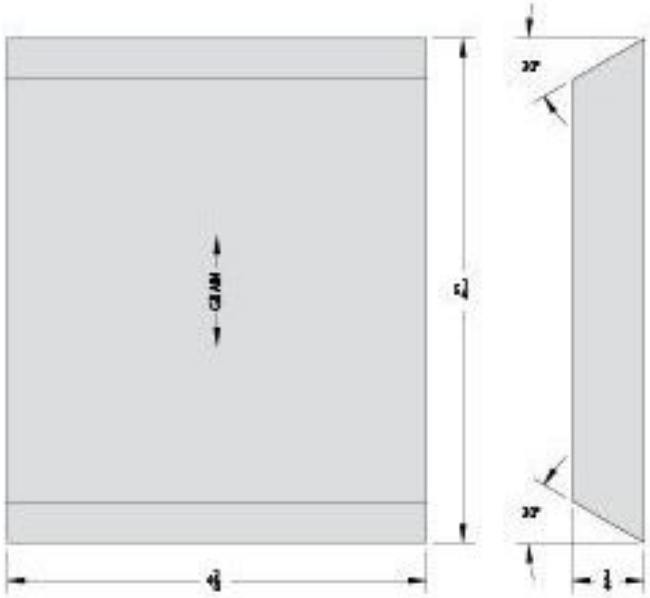
ENLARGE PATTERNS 200%



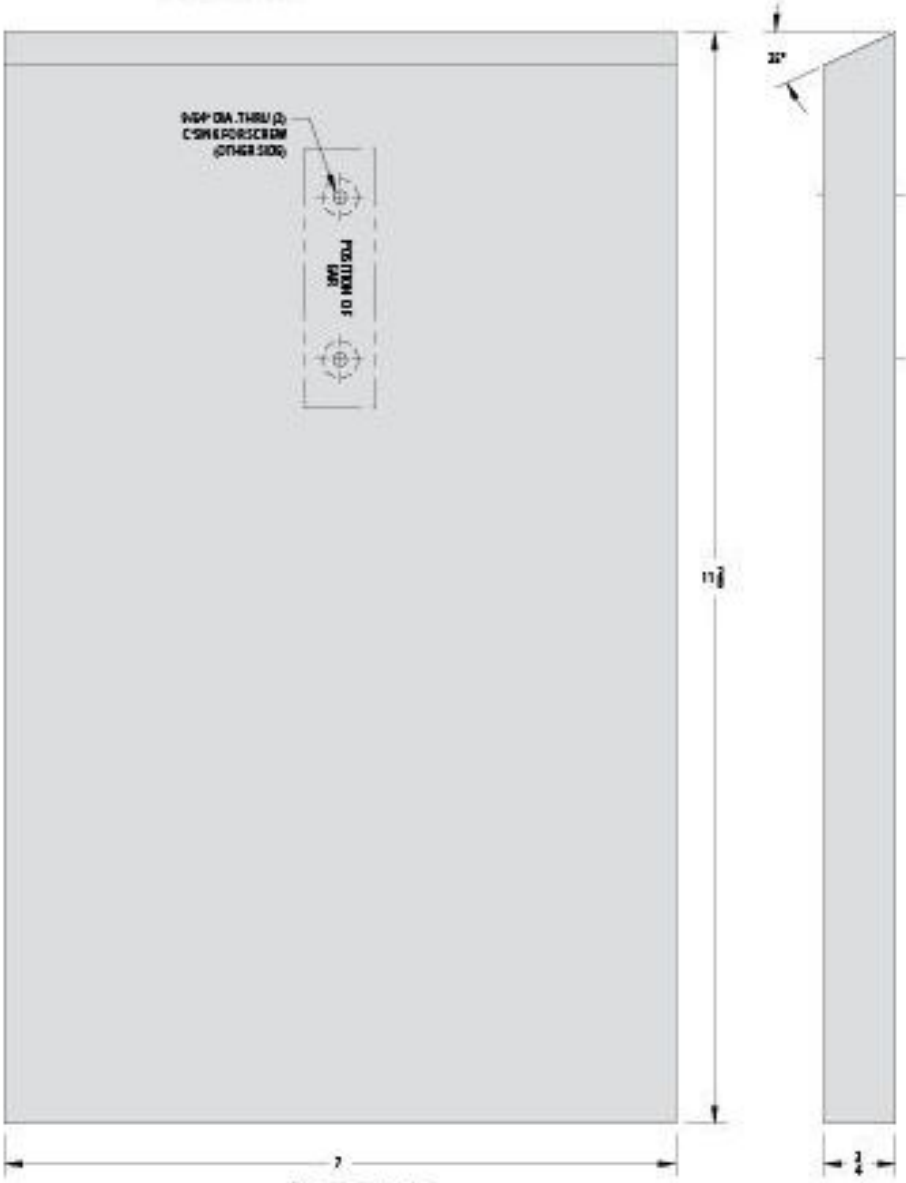
EYE CENTER
½" X 2" X 2" (2 REQ'D)



EAR
¾" X 1¾" X 3⅜" (2 REQ'D)



BOTTOM
½" X 4⅜" X 5¼"



ROOF B
¾" X 7" X 11⅞" (2 REQ'D)

ENLARGE PATTERNS 200%

BIRD HOUSE

WINDOW VIEW BIRDHOUSE

THIS BIRDHOUSE PROVIDES THE PERFECT WAY TO BIRD WATCH. The clear plastic panel in back allows you to watch how the nest is built, watch the progress as the eggs are laid, and see the baby birds first hatch. The feeding of the babies is amazing to watch as the small birds impatiently wait for the adult birds to finally drop the next morsel into their open mouth. You will be able to witness the first shaky flights when the little ones are finally ready to fledge. And all this by simply watching through your window! This is an educational experience for you as well as your children or grandchildren.

The cavity size is suitable for chickadees, nuthatches, and titmice. You can increase the entrance hole size to 1 ½" (38mm) or 1¾" (44mm) if you want to attract larger birds. (See Appendix C.)

For versatility, use chain to hang the birdhouse. Locate it under the house eave with the back of the birdhouse facing your window. Measures 8½" (216mm) W x 8" (203mm) D x 12" (305mm) H.

PLAN OF PROCEDURE

This project was constructed from cedar, but pine or other woods could be substituted. With careful layout, all pieces can be cut from a 1" x 8" (25 x 203mm) board. Although most pieces are called out in the Bill of Materials as being ¾" (19mm) thick, the cedar boards we used were slightly thicker. Stock up to ⅞" (22mm) thick can be used with this design. Using thicker stock will require that you make some size adjustments.

The majority of the assembly is done with water resistant glue and finishing nails. Do not glue the bottom, as you will want to be able to remove it to clean out old nests. The plan shows screw clearance holes drilled in the Side pieces. These holes allow you to attach the bottom with #6 x 2" (51mm) wood screws.

Cedar is sometimes sold with one smooth side and one rough side. We faced the rough side out on all pieces.

The Eye Center pieces are cut from ½" (13mm) stock. Re-saw a strip of ¾" (19mm) thick stock to ½" (13mm) thickness on a table saw. The Ears are attached with glue and screws installed from *inside* of the birdhouse.

Although not shown, remember to drill ⅜" (10mm) air vent holes underneath the roof edges, and ¼" (6mm) drain holes in the bottom.

The finished birdhouse is fitted with two screw eyes approximately 1" (25mm) from each end of the roof peak. Attach a length of #16 Jack Chain (or equivalent) to each screw eye. Using pliers, open the chain link just far enough to slip it onto the screw eye. Squeeze the link to close it. Hang the birdhouse from screw eyes installed under the eave of your house.

Begin by cutting each of the parts as described below. Then assemble the project according to the Final Assembly instructions and as shown in the Assembly Drawing.

EYEBROW: Transfer the pattern onto ¾" (19mm) stock and cut out. (Two Pieces Required)

EYE CENTER: Transfer the pattern onto ½" (13mm) stock (re-sawn ¾" (19mm) stock) and cut out. Drill the ¼" (6mm) diameter holes through. (Two Pieces Required)

NOSTRIL: Transfer the pattern onto ¾" (19mm) stock and cut out. (Two Pieces Required)

NOSE: Transfer the pattern onto ¾" (19mm) stock and cut out.

EAR: Transfer the pattern onto ¾" (19mm) stock and cut out. (Two Pieces Required)

CHEEK: Transfer the pattern onto ¾" (19mm) stock and cut out. (Two Pieces Required)

HAND: Transfer the pattern onto ¾" (19mm) stock and cut out. (Two Pieces Required)

BOTTOM: Lay out and cut to size from ¾" (19mm) stock.

ROOF A: Lay out and cut to size from ¾" (19mm) stock.

ROOF B: Lay out and cut to size from ¾" (19mm) stock.

SIDE: Lay out and cut to size from ¾" (19mm) stock. Cut the 45° bevel. Cut the ⅛" (3mm) x ⅛" (3mm) groove. Drill the 5/32" (4mm) diameter holes through and countersink for screws. (One Right Hand & One Left Hand Piece Required)

BACK: Lay out and cut to size from ¾" (19mm) stock.

FRONT: Lay out and cut to size from ¾" (19mm) stock. Drill the 1¼" (32mm) diameter hole through.

SANDING: Finish sand all parts.

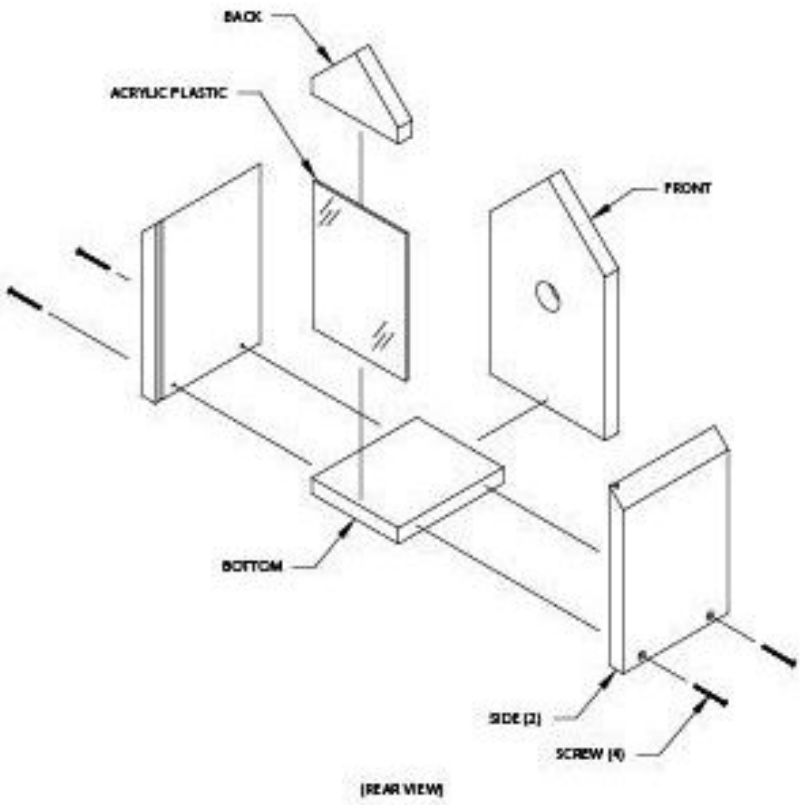
FINAL ASSEMBLY:

STEP 1: Glue and nail the Side pieces to the Front and Back pieces. Slip the Acrylic Plastic in the ⅛" (3mm) grooves in the Side pieces and attach the removable Bottom piece with screws.

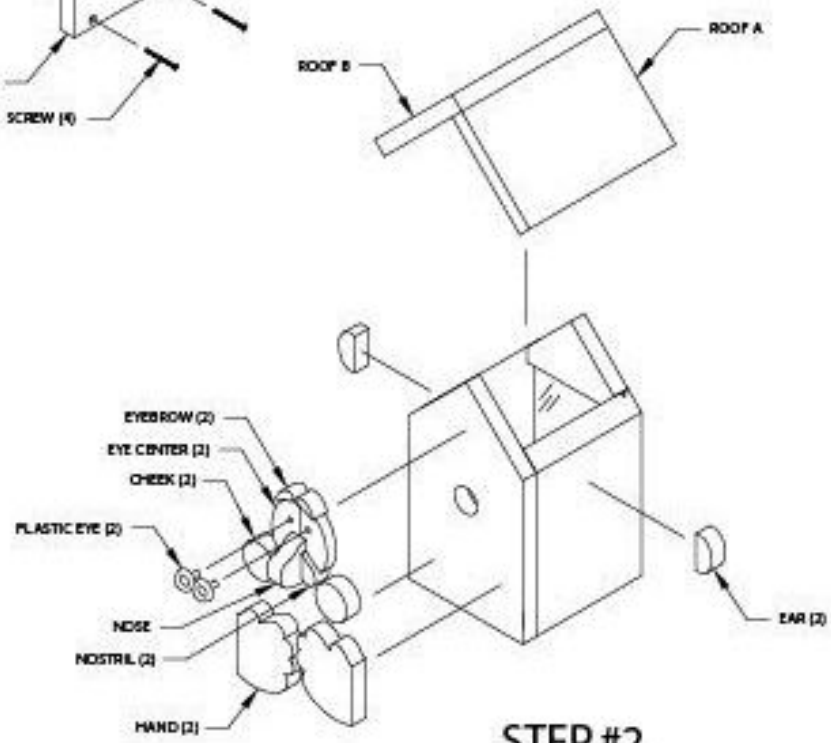
STEP 2: Center the Roof A and Roof B pieces and attach with glue and nails. Glue and nail the Ears to the Sides. Glue and nail the Eyebrows, Eye Center, Nose, Nostrils, Cheek, and Hand pieces to the Front where shown. Insert the Plastic Eyes in the ¼" (6mm) holes in the Eye Center pieces (you will need to shorten the shanks on the Plastic Eyes).

HANGING THE PROJECT: Drill 1/10" (2.5mm) diameter holes for the Screw Eyes on ridgeline (1½" (38mm) from each end). Open chain with pliers and attach chain.

FINISHING: If you make this project from cedar or redwood you can omit using any type of wood finish and just let the wood weather. You could also brush a coat of exterior wood preservative or a coat of sanding sealer followed by a coat of exterior polyurethane.



STEP #1

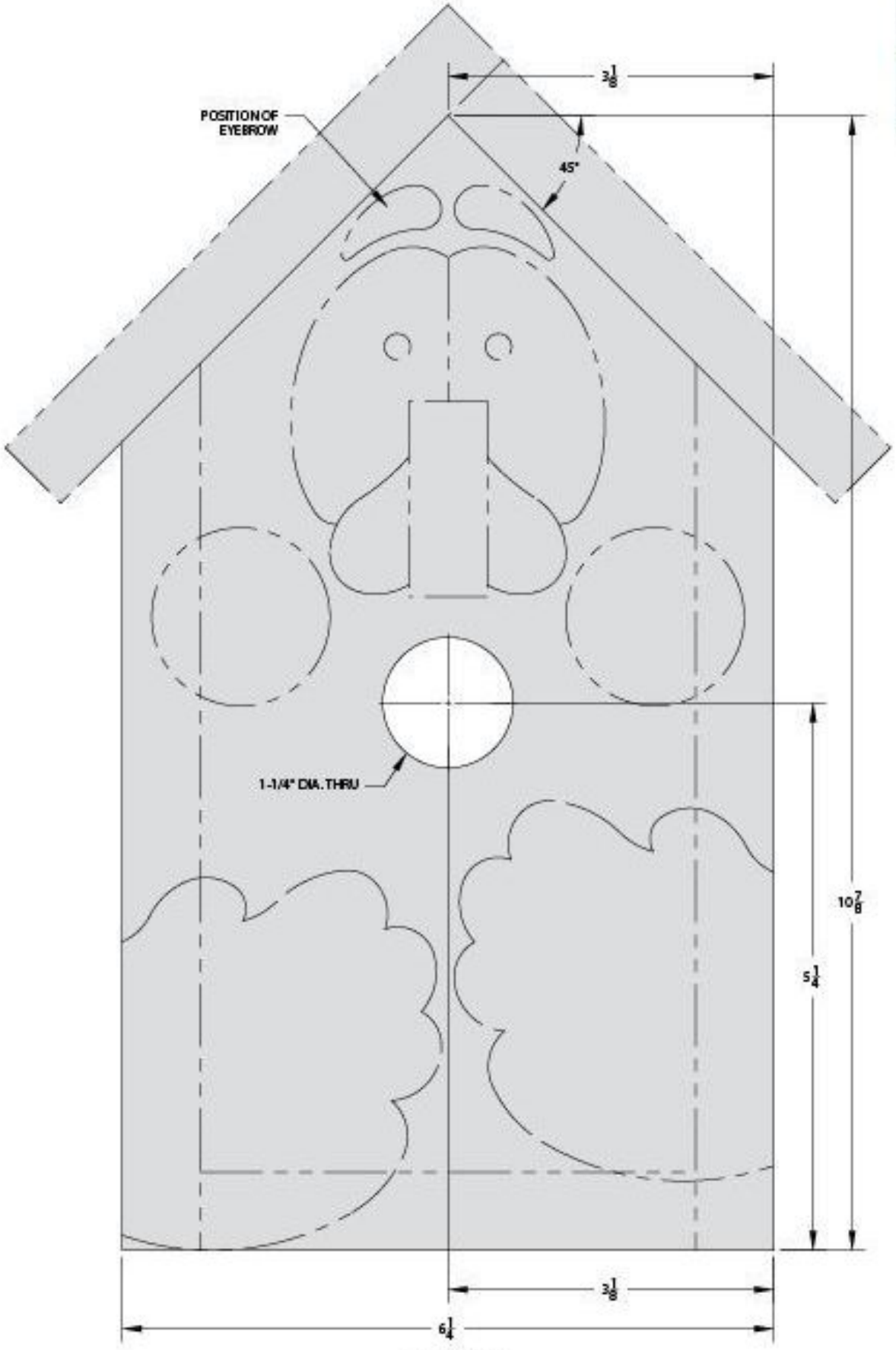


STEP #2

BILL OF MATERIALS

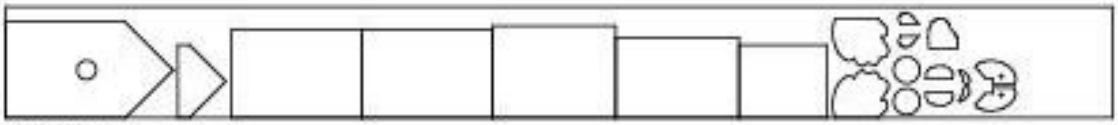
QTY.	PART	SIZE OF MATERIAL
2	Eyebrow	¾" x ¾" x 1" (19 x 19 x 25mm)
2	Eye Center	½" x 1½" x 2¾" (13 x 38 x 70mm)
2	Nostril	¾" x ¾" x 1⅜" (19 x 19 x 35mm)
1	Nose	¾" x 2" x 2" (19 x 51 x 51mm)
2	Ear	¾" x ⅞" x 1⅞" (19 x 22 x 48mm)
2	Cheek	¾" x 1¾" Dia. (19 x 44mm)
2	Hand	¾" x 3⅛" x 3⅝" (19 x 79 x 92mm)
1	Bottom	¾" x 4¾" x 5¾" (19 x 121 x 146mm)
1	Roof A	¾" x 5¼" x 8" (19 x 133 x 203mm)
1	Roof B	¾" x 6" x 8" (19 x 152 x 203mm)

QTY.	PART	SIZE OF MATERIAL
2	Side	¾" x 5¾" x 8½" (19 x 146 x 216mm)
1	Back	¾" x 3⅛" x 4¾" (19 x 79 x 121mm)
1	Front	¾" x 6¼" x 10⅞" (19 x 159 x 276mm)
*2	Plastic Eye, Brown	15/16" (24mm) Dia. (#9915)
1	Clear Acrylic Plastic	5" x 7" (127 x 178mm)
4	Screw	2" (51mm) x #6
4	Screw Eye	1⅝" (40mm)
1	Chain	#16 x 12" (3.66m)
1 ea.	Sanding Sealer, Polyurethane	

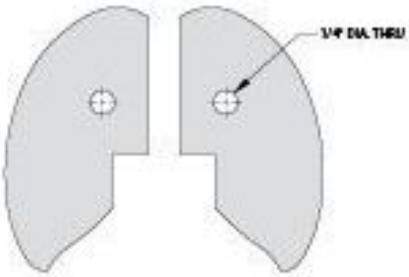


FRONT
¾" X 6½" X 10⅞"

ENLARGE PATTERN 140%



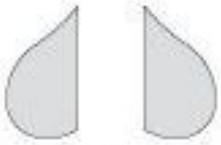
CUTTING DIAGRAM



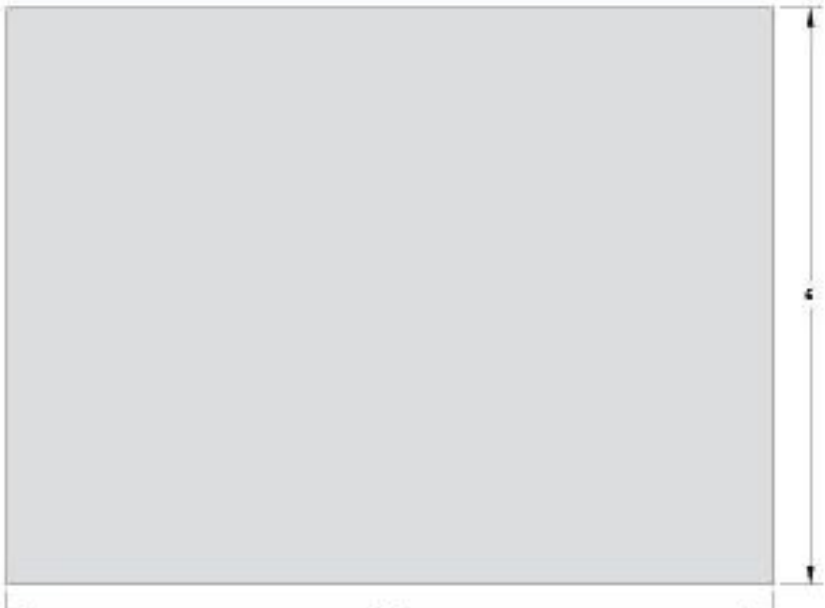
EYE CENTER
½" X 1 ½" X 2¾" (2 REQ'D)

ROOF A
½" X 5 ¼" X 8"

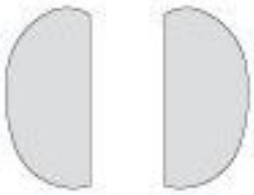
EYEBROW
¾" X ½" X 1" (2 REQ'D)



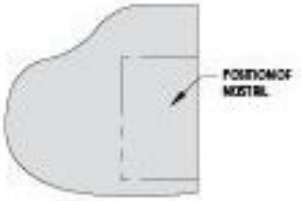
NOSTRIL
½" X ¾" X 1¾" (2 REQ'D)



ROOF B
½" X 6" X 8"



EAR
¾" X 3½" X 1 ½" (2 REQ'D)

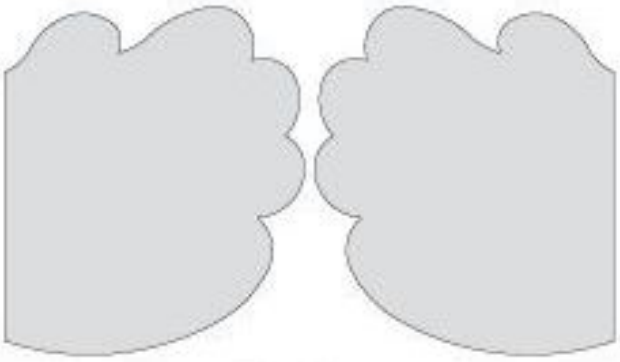


NOSE
¾" X 2" X 2"

ENLARGE PATTERNS 200%

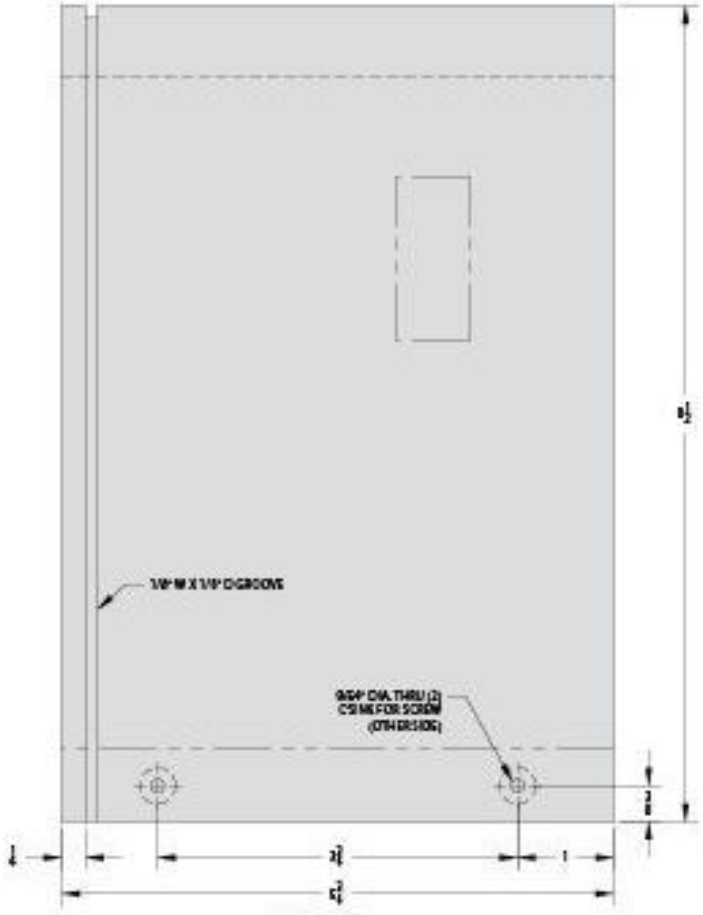
BOTTOM

¾" X 4½" X 5½"



HAND

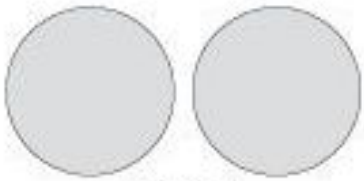
¾" X 3¼" X 3½" (2 REQ'D)



SIDE

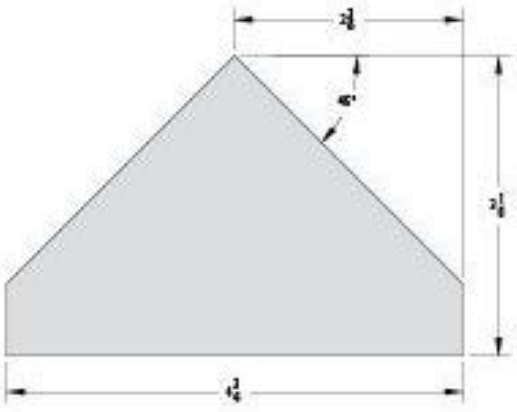
¾" X 5½" 8½"

(1 RH & 1 LH REQ'D) (RH SHOWN)



CHEEK

¾" X 1½" DIA. (2 REQ'D)



BACK

¾" X 3½" 4½"

ENLARGE PATTERNS 200%

TREE FROG BIRDHOUSE

IT SEEMS NATURAL TO DESIGN A BIRDHOUSE IN THE SHAPE OF A TREE FROG, A CREATURE THAT SPENDS PART OF ITS LIFE IN TREES.

While tree frogs are best known to live in tropical rain forests, at least one species, the spring peeper, is native to North America. The southern spring peeper is found in northern Florida and southern Georgia. The northern spring peeper can be found all over the eastern North America.

Tree frogs vary in color from vivid green to brown. They have large, well-developed discs at the finger and toe tips making most varieties superior climbers.

The birdhouse cavity size is suitable for chickadees, nuthatches, and titmice. Enlarge the hole to 1½" (38mm) to attract finches, flickers, tree swallows, and warblers.

This project features easy construction from ¾" (19mm) lumber. The finished project measures 12½" (318mm) high with a 5" x 5" x 5" (127 x 127 x 127mm) inside cavity.

PLAN OF PROCEDURE

This project is constructed from ¾" (19mm) stock. The Cutting Diagram shows how much lumber you'll need.

The majority of the assembly is done with water-resistant glue and finishing nails. Do not glue the Back piece so you can remove it for cleaning. The plan shows screw clearance holes drilled in the back piece. These allow you to attach the Back piece with #6 x 2" (51mm) wood screws.

Patterns are not provided or needed for the Bottom A, Bottom B, Roof A, or Roof B pieces. These are all simple rectangular shaped pieces. Simply cut them to the length and width in the Bill of Materials.

Although not shown, remember to drill ¾" (10mm) air vent holes underneath the roof edges and ¼" (6mm) drain holes in the bottom.

Begin by cutting each of the parts as described below. Then assemble the project according to the Final Assembly Instructions and as shown in the Assembly Drawing.

FRONT FOOT, REAR FOOT, FRONT LEG, REAR LEG: Transfer the pattern onto ¾" (19mm) stock and cut out. (Two pieces each required.)

HEAD FRONT: Transfer the pattern onto ¾" (19mm) stock and cut out. Drill the ¼" (6mm) diameter holes through. (Note that the heavy line forming the mouth is a cut line. Cut out the mouth opening and discard the cutout.)

HEAD BACK: Transfer the pattern onto ¾" (19mm) stock and cut out. (Note that the thin line forming the mouth is a paint line. Do not cut out the mouth shape on this piece.)

FRONT: Layout and cut to size from ¾" (19mm) stock. Drill the 1¼" (32mm) diameter hole through.

BACK: Layout and cut to size from ¾" (19mm) stock. Drill the #64" (3.6mm) holes through and countersink for screws.

BOTTOM A, BOTTOM B, ROOF A, ROOF B: Layout and cut to size from ¾" (19mm) stock according to the dimensions given in the Bill of Materials.

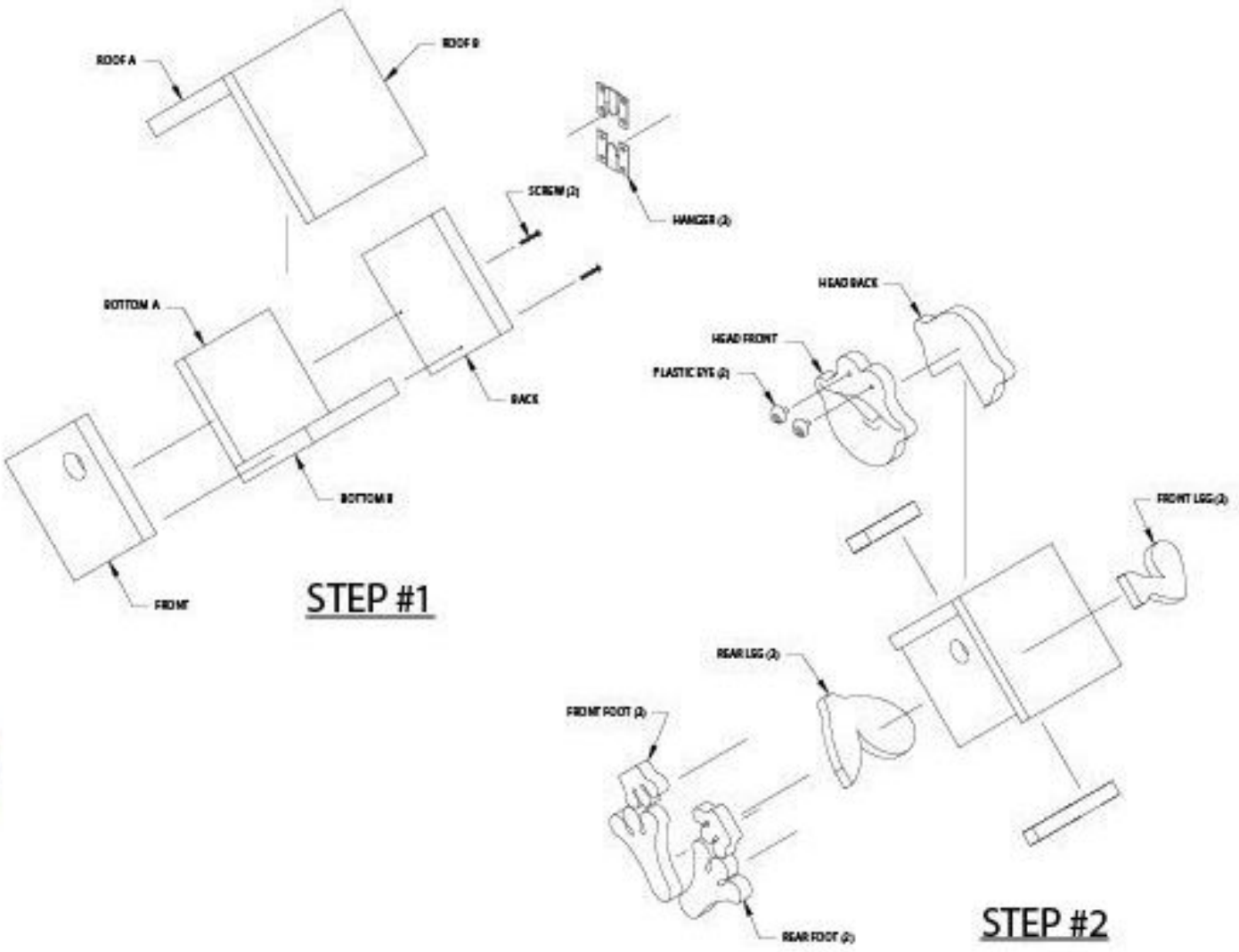
SANDING: Finish sand all parts.

FINAL ASSEMBLY:

STEP 1: Glue and nail the Bottom B piece to the Bottom A piece. Glue and nail the Front piece to the Bottom A and B pieces. Attach the Back piece with screws (no glue). Glue and nail the Roof A and B pieces (do not attach to the Back piece). Attach the Flush Mount Hanger to the Back.

STEP 2: Attach the Head Front to the Head Back. Attach the Head Front to the Front where shown. Attach the Front Foot and Rear Foot pieces to the Front where shown. Attach the Front Leg pieces to the Roof pieces butted up against the Front Foot pieces. Attach the Rear Leg pieces to the Bottom pieces butted up against the Rear Foot pieces. After finishing, install the Plastic Eyes in the Head Front piece.

FINISHING: Paint the entire project lime green. Paint the mouth black. Do not paint the inside of the project.



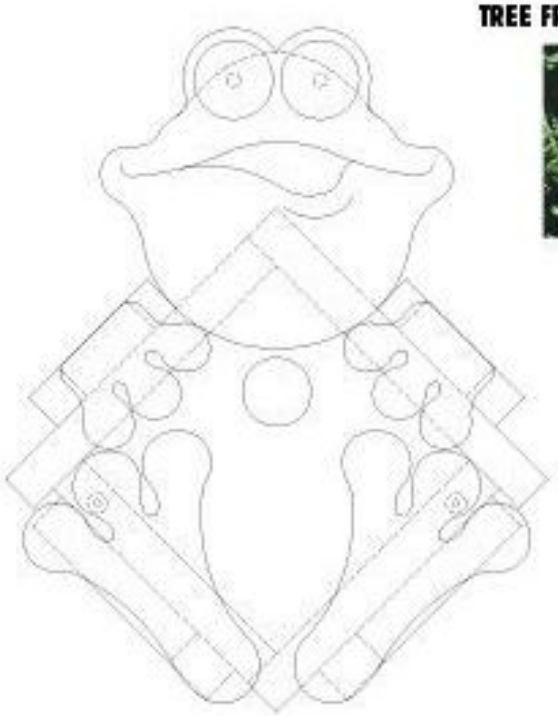
BILL OF MATERIALS

QTY.	PART	SIZE OF MATERIAL
2	Front Foot	¾" x 2⅛" x 2⅞" (19 x 54 x 73mm)
2	Rear Foot	¾" x 3¾" x 5⅛" (19 x 95 x 130mm)
2	Front Leg	¾" x 3⅛" x 3⅝" (19 x 79 x 92mm)
2	Rear Leg	¾" x 4½" x 5⅛" (19 x 114 x 130mm)
1	Head Front	¾" x 5⅞" x 6½" (19 x 149 x 165mm)
1	Head Back	¾" x 4¾" x 6½" (19 x 121 x 165mm)
1	Front	¾" x 5¾" x 5¾" (19 x 146 x 146mm)
1	Back	¾" x 5¾" x 5¾" (19 x 146 x 146mm)
1	Bottom A	¾" x 5" x 5" (19 x 127 x 127mm) (not drawn)
1	Bottom B	¾" x 5" x 5¾" (19 x 127 x 146mm) (not drawn)
1	Roof A	¾" x 6¼" x 6½" (19 x 159 x 165mm) (not drawn)
1	Roof B	¾" x 6½" x 7" (19 x 165 x 178mm) (not drawn)
*2	Plastic Eye	1⅜" (36mm) Dia. (#9299)
2	Screw	2" (51mm) x #6
*1	Flush Mount Hanger (#1262)	

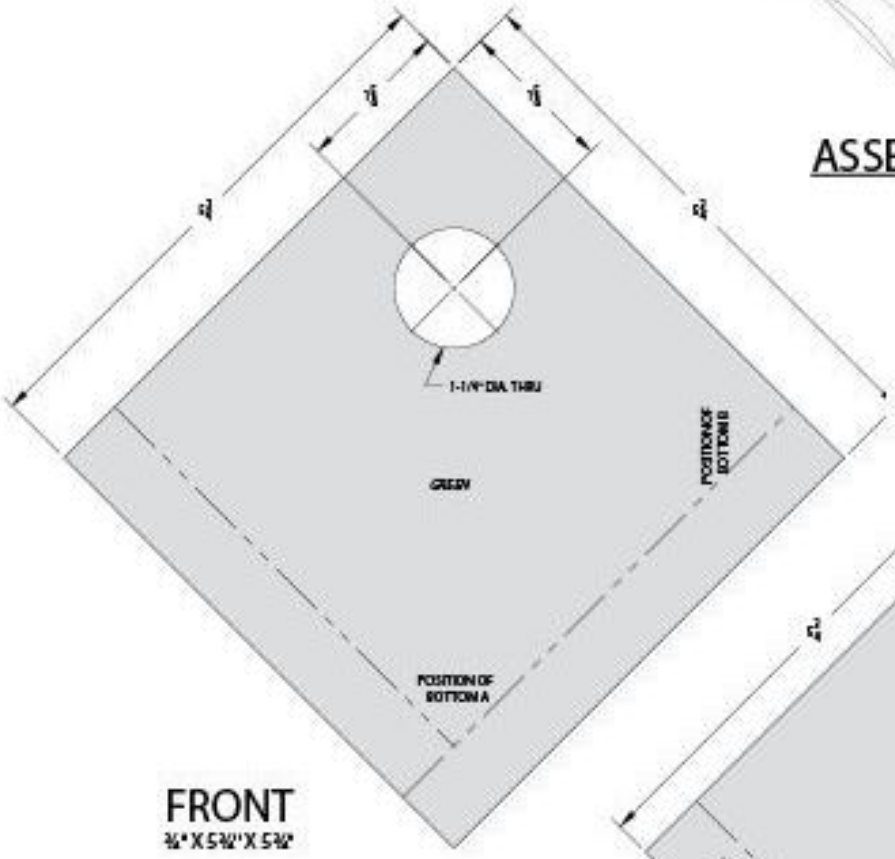
PAINT

Acrylic paint is recommended.

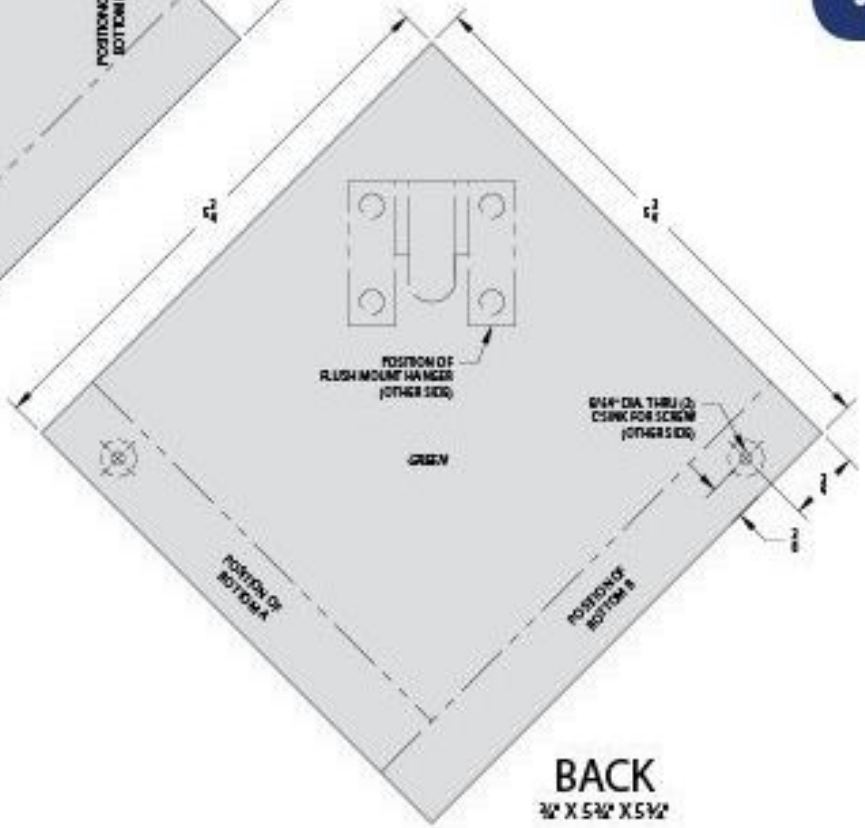
QTY.	GENERIC COLOR	PART NUMBER
1	Black	2 oz. (Delta #02506)
1	Green	2 oz. (Delta #02489)
1	Exterior/Interior Varnish, Satin	8 oz. (Delta #07003)



ASSEMBLY DRAWING



FRONT
¾" X 5½" X 5½"

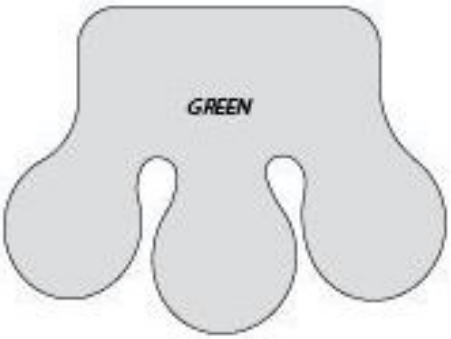


BACK
¾" X 5½" X 5½"

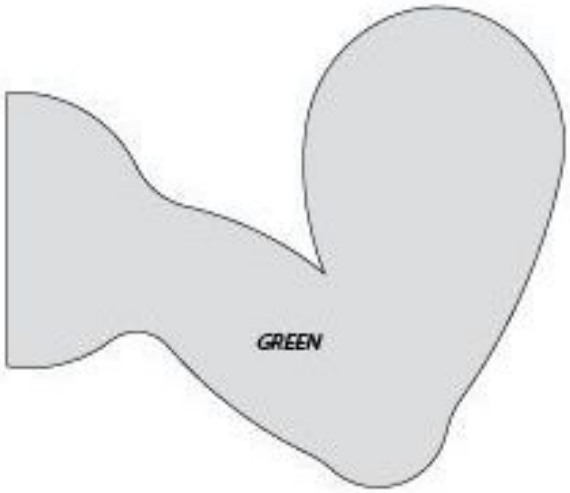
ENLARGE PATTERNS 200%

1" X 8" X 8'

CUTTING DIAGRAM

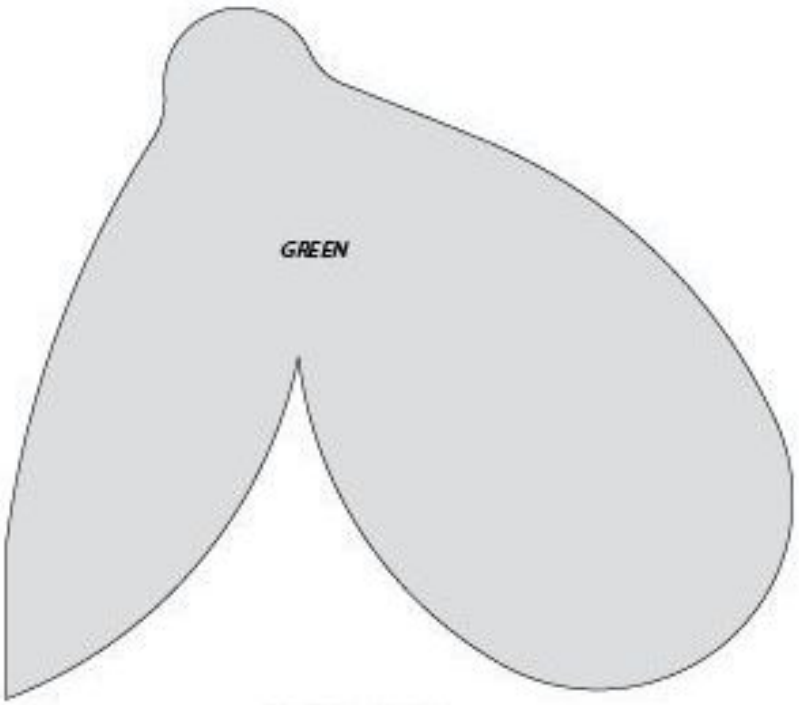


FRONT FOOT
¾" X 2⅛" X 2¾" (2 REQ'D)



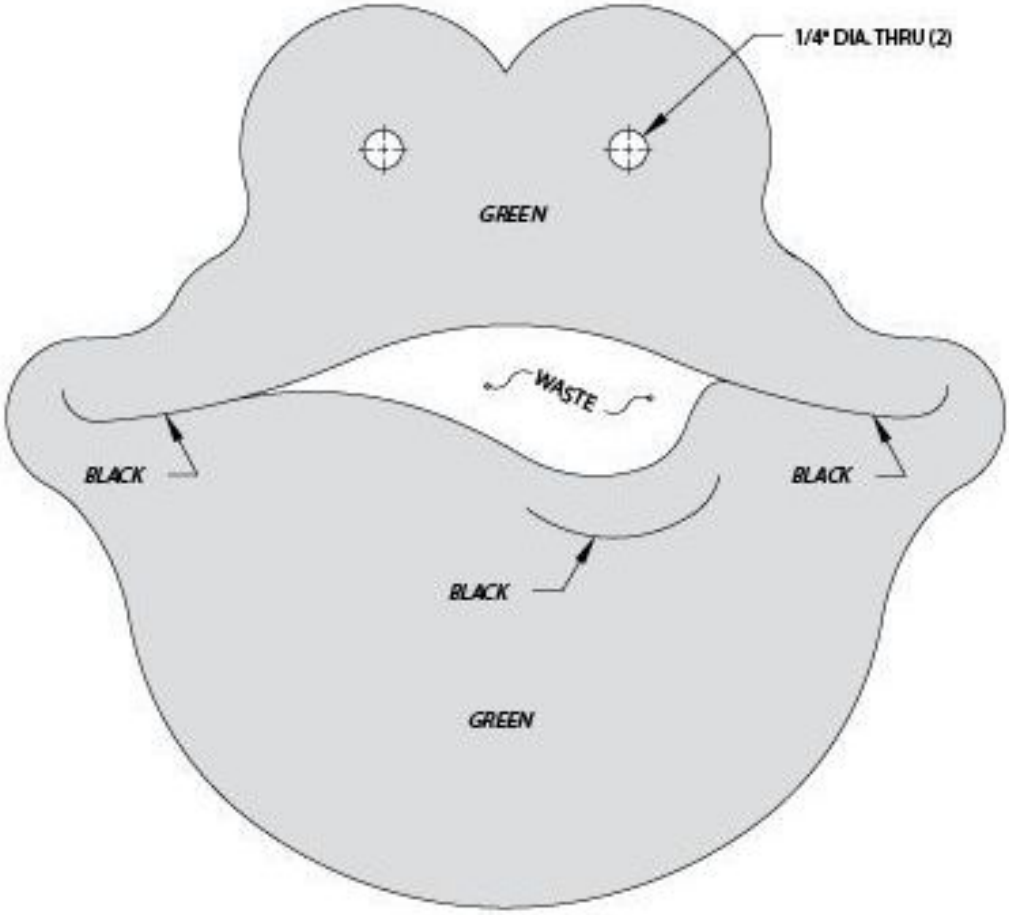
FRONT LEG
¾" X 3½" X 3⅝" (2 REQ'D)

REAR FOOT
¾" X 3½" X 5¼" (2 REQ'D)

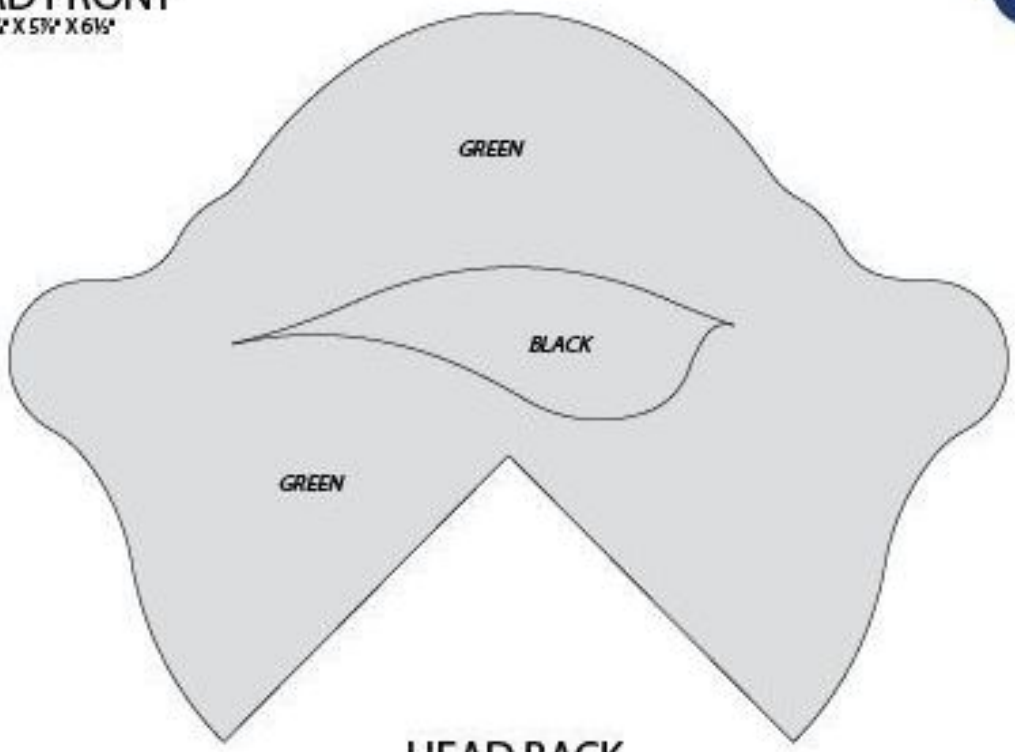


REAR LEG
¾" X 4½" X 5¾" (2 REQ'D)

ENLARGE PATTERNS 125%



HEAD FRONT
½" X 5¾" X 6½"



HEAD BACK
½" X 4½" X 6½"

ENLARGE PATTERNS 125%

BIRD HOUSE

ROBIN RESIDENCE NESTING SHELF

THE AMERICAN ROBIN ISN'T A ROBIN AT ALL!

It's actually a thrush. Americans, especially those living in the northern states, have a fondness for the robin because its arrival each year is a sign that warmer weather is soon to follow. Robins can be found throughout most of North America, from Alaska and Canada southward to northern Florida and Mexico. The American robin is one of the first birds to nest in the spring. It is also one of the first birds to sing at dawn.

Robins won't build a nest in a traditional birdhouse, but they are likely to build one on a nesting shelf. This design incorporates the colorful features of the head, wings, and breast of this likeable bird. Other species that might nest on this shelf include phoebes and barn swallows.

Nesting shelves can be located on the side of your house or garage about 10" down from the eave. Pick a location that will be protected from raccoons, hawks, and other predators. The finished project measures 23½" (597mm) high.

PLAN OF PROCEDURE

This project is constructed from ¾" (19mm) pine or cedar lumber. All pieces can be cut from a 1" x 12" (25 x 305mm) x 8' (2.4m) board.

Assembly is done primarily with glue and nails. The Head assembly is attached with glue and screws.

The corners of the Bottom pieces are cut at 45° to allow for water drainage. Additional ¼" (6mm) drain holes can be drilled in the bottom if desired.

Begin by cutting each of the parts as described below. Then assemble the project according to the Final Assembly Instructions and as shown in the Assembly Drawing.

FRONT: Layout and cut to size from ¾" (19mm) stock.

HEAD: Transfer the pattern onto ¾" (19mm) stock and cut out. Drill the ¼" (6.5mm) Dia. hole through. (Two pieces required.)

WING, SIDE: Transfer the pattern onto ¾" (19mm) stock and cut out. (Two pieces each required.)

BOTTOM: Layout and cut to size from ¾" (19mm) stock. Bevel the edges 15° and nib the corners as shown. (Two pieces required.)

TOP: Transfer the pattern onto ¾" (19mm) stock and cut out. Bevel the edge 15°. Drill the ⅛" (3.6mm) diameter Screw clearance holes through and countersink for screws.

BACK: Transfer the pattern onto ¾" (19mm) stock and cut out.

SANDING: Finish sand all parts.

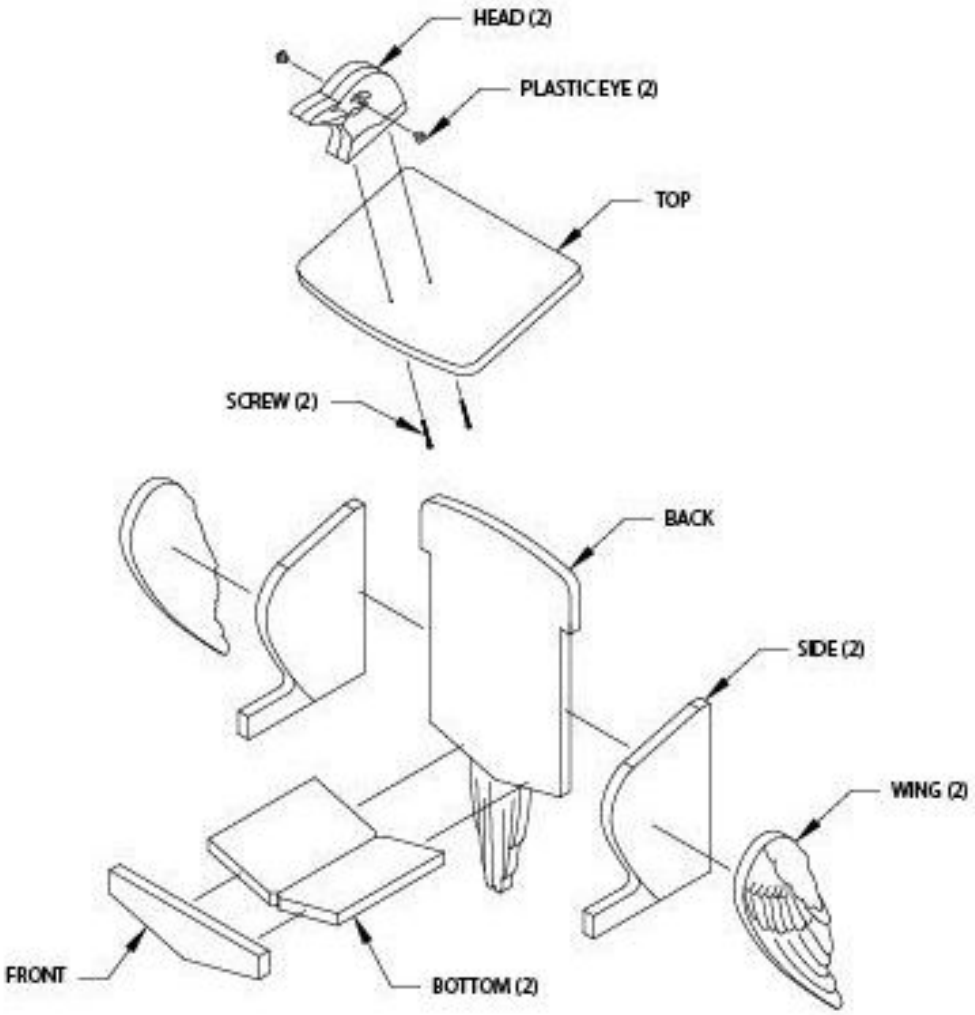
FINAL ASSEMBLY:

Attach the Side and Bottom pieces to the Back where shown. Attach the Front to the Side and Bottom pieces. Attach the Wing pieces to the Sides where shown.

Glue the Head pieces together and attach to the Top piece with the 2" (51mm) Screws. Attach the Top piece to the Sides and Back. After final finishing, insert the Plastic Eyes in the ¼" (6.6mm) holes in the Head pieces.

FINISHING: If the project is made with cedar you won't need to stain the areas marked "natural" on the pattern drawings. The project pictured was made with pine so the areas marked "natural" were stained with a cedar colored exterior stain.

Suggested paint colors are indicated on the pattern drawings of the parts. A black paint marker was used for the details on the wings.



ASSEMBLY DRAWING

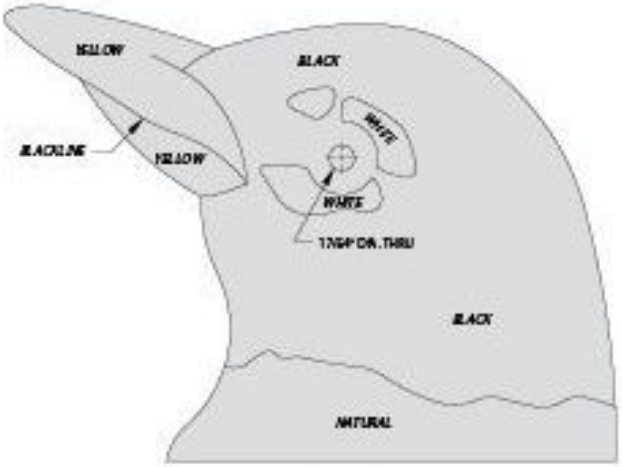
BILL OF MATERIALS

QTY.	PART	SIZE OF MATERIAL
1	Front	¾" x 3" x 11¼" (19 x 76 x 285mm)
2	Head	¾" x 4¾" x 6½" (19 x 121 x 162mm)
2	Wing	¾" x 4¾" x 14⅝" (19 x 121 x 372mm)
2	Bottom	¾" x 5¼" x 8" (19 x 133 x 203mm)
2	Side	¾" x 8¾" x 11" (19 x 222 x 279mm)
1	Top	¾" x 9¾" x 13¼" (19 x 248 x 337mm)
1	Back	¾" x 11¼" x 23⅝" (19 x 285 x 600mm)
*2	Plastic Eye	¾" (19mm) Dia. (#8630)
2	Screw	2" (51mm) x #6
	Clear Finish	
	Sanding Sealer, Polyurethane	

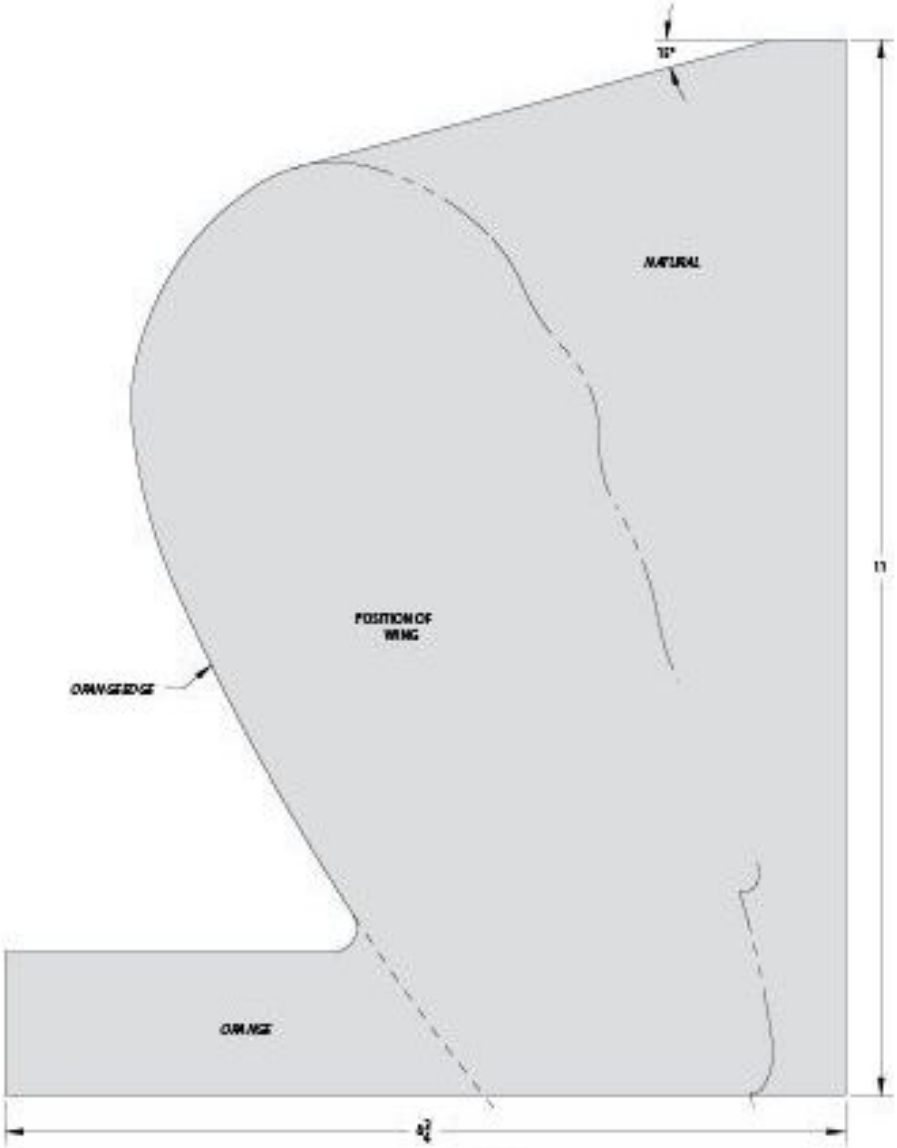
PAINT

Exterior Acrylic Latex Primer and Gloss or Semi-Gloss Exterior Acrylic Latex paint. A Black Paint Marker was used for all detail work

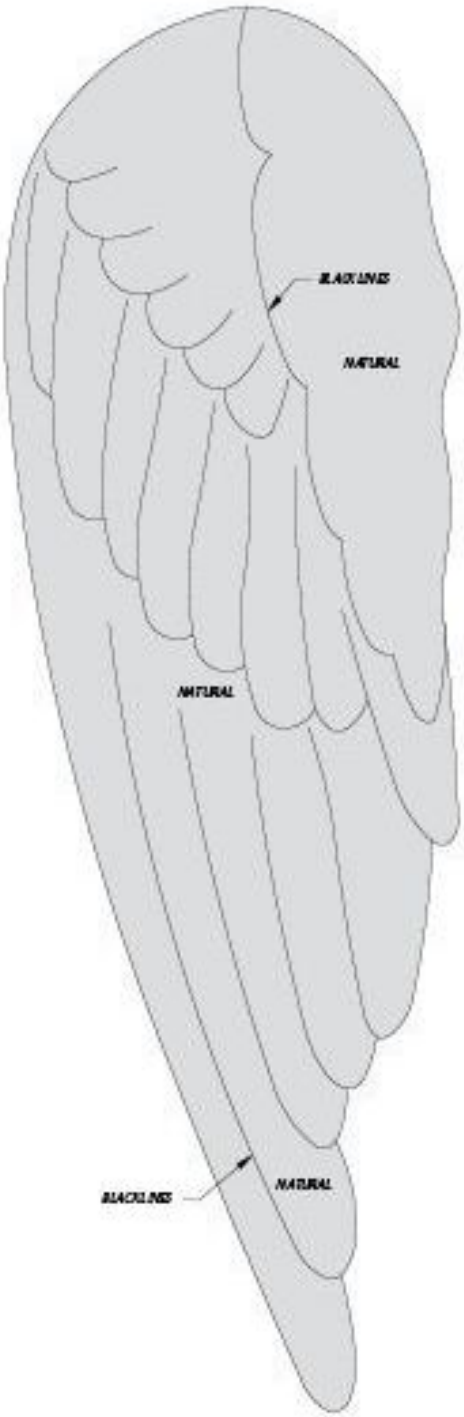
QTY.	GENERIC COLOR	PART NUMBER
1	Black, White, Yellow, Orange	
1	Black Paint Marker	Medium Line



HEAD
¾" X 4½" X 6¾" (2 REQ'D)

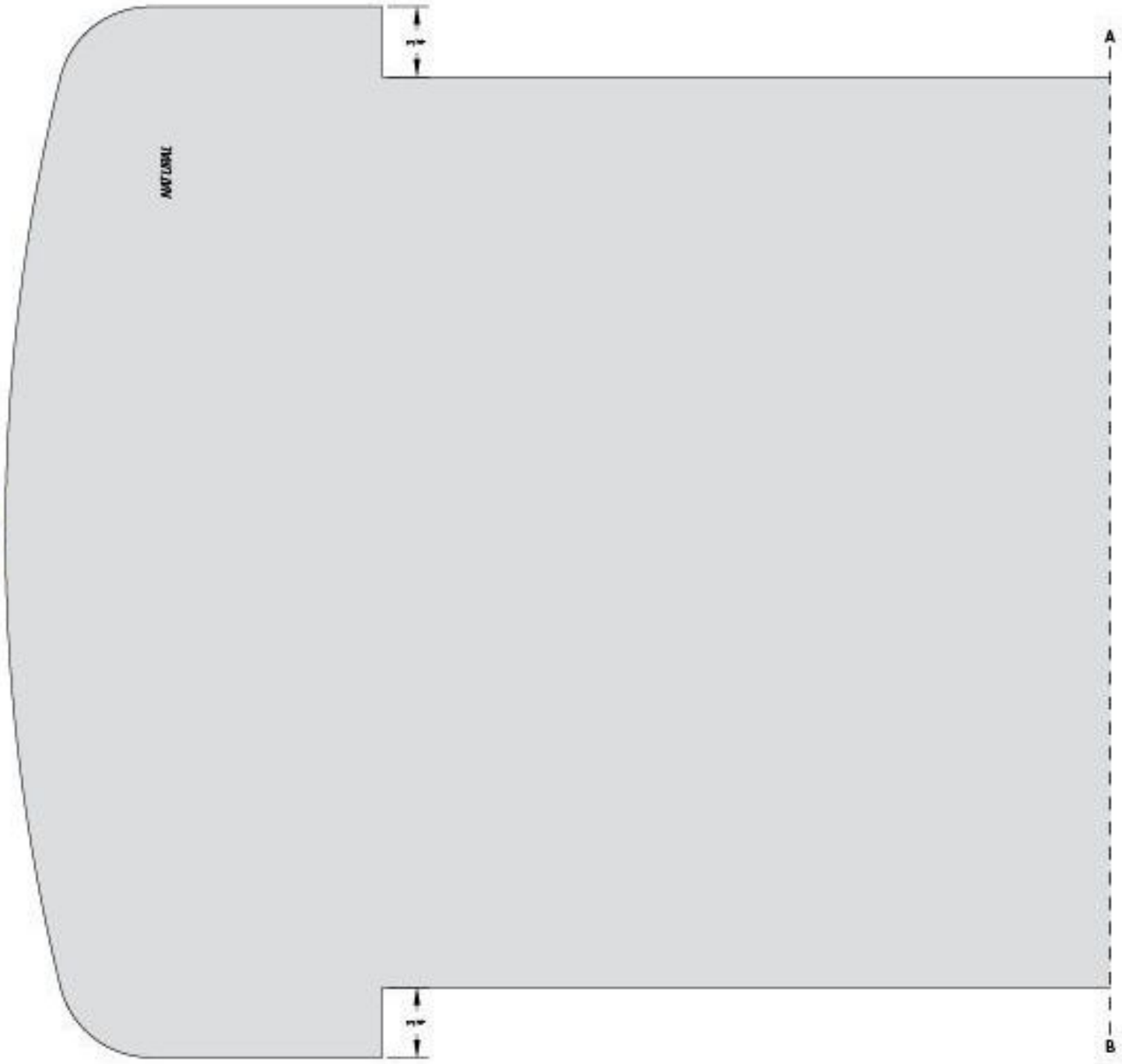


SIDE
¾" X 8½" X 11" (2 REQ'D)

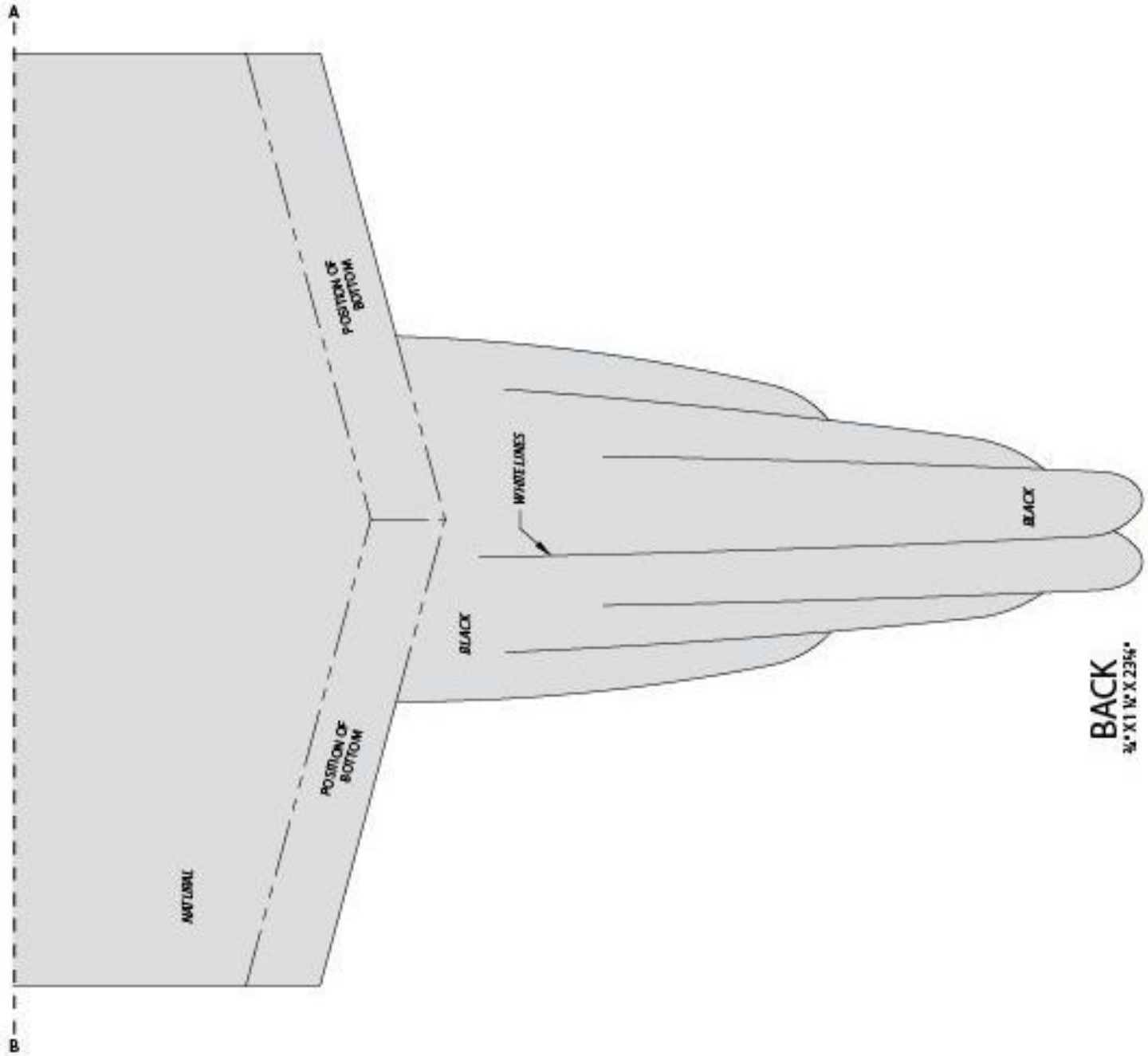


WING
½" X 4½" X 14⅝" (2 REQ'D)

ENLARGE PATTERNS 200%

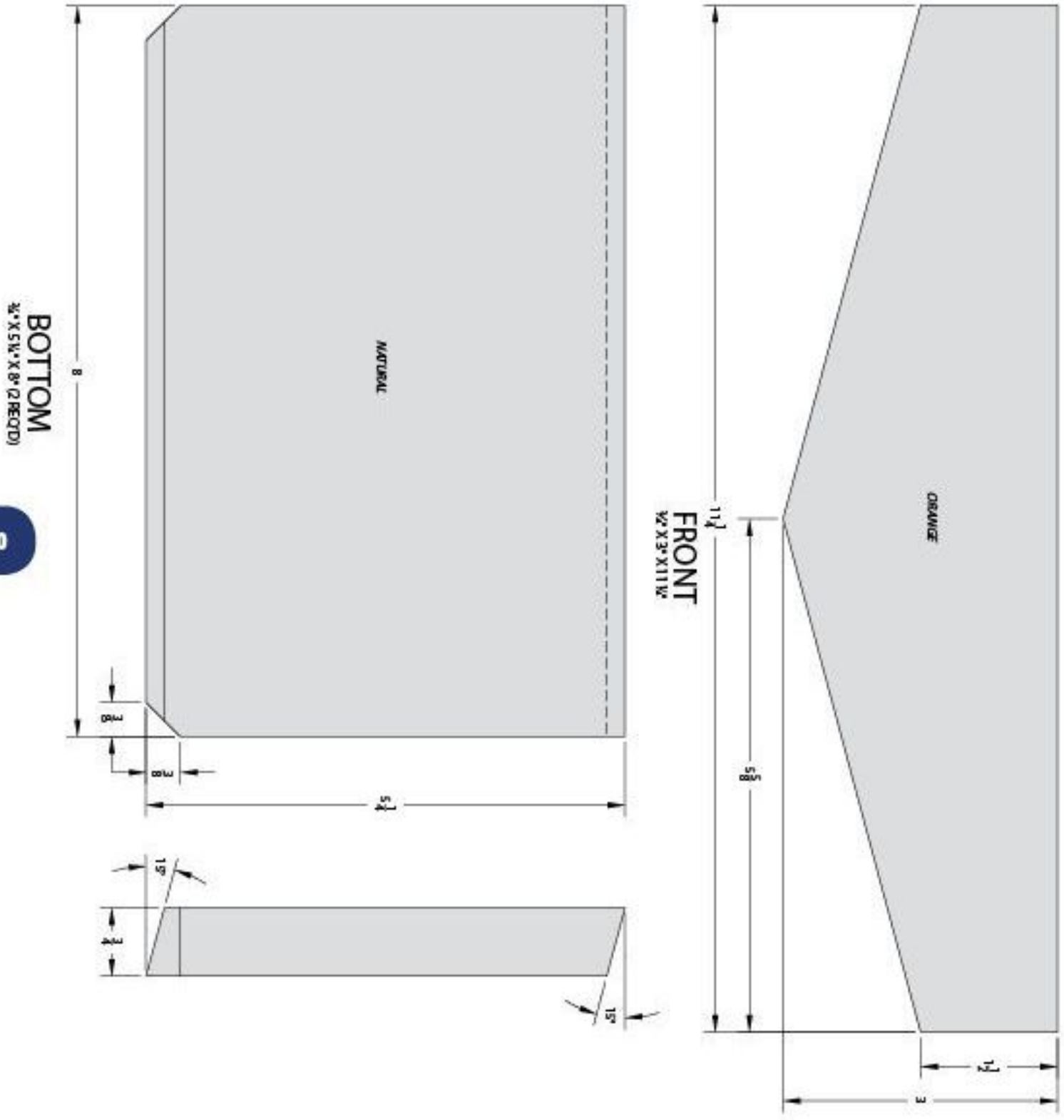


ENLARGE PATTERN 160%

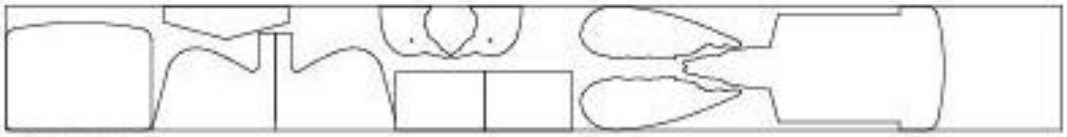


BACK
¾" X 11 ½" X 23¾"

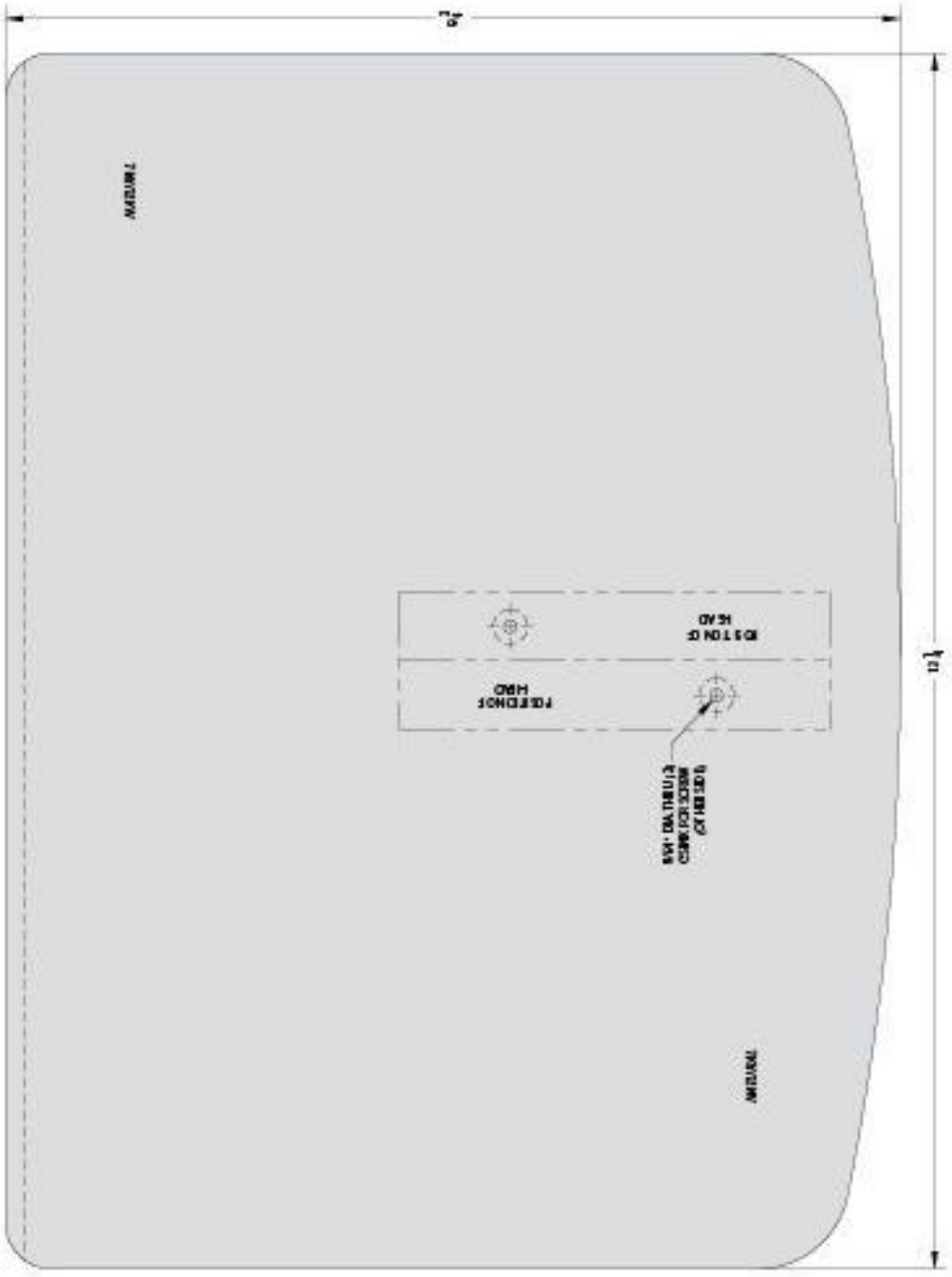
ENLARGE PATTERN 160%



ENLARGE PATTERNS 150%



CUTTING DIAGRAM



ENLARGE PATTERNS 200%

WHIMSICAL BIRDHOUSE

THE DICTIONARY DEFINES WHIMSICAL AS "FULL OF, OR CHARACTERIZED BY, WHIMS OR WHIMSY." The word whim comes from the phrase whim-wham, which originally referred to a "fanciful or fantastic" object. This birdhouse is nothing if not whimsical—both in the crazy shape and in the kaleidoscope of colors!

The generous 5¼" x 9" (133 x 229 mm) cavity makes this house a good candidate for house finches, flycatchers, and tree swallows, depending on the size you cut the entrance hole. This project could also be used as an indoor or outdoor decoration. The main roof pieces are flush on the back side so the project can be hung on a vertical wood post or, if using it as an indoor decoration, on an interior wall. This wild child of a birdhouse will stand out no matter where you place it! The finished project measures 16½" (419mm) high.

PLAN OF PROCEDURE

This project is constructed from ¼" (6mm) exterior plywood and ¾" (19mm) lumber. Use the ¼" (6mm) plywood for all overlays such as the doors and windows. The Side Slats are made from ¼" (6mm) solid stock. Make the slats by ripping ¾" (19mm) thick stock into ¼" (6mm) strips. These strips are glued and nailed to the curved edges of the Front and Back pieces. You'll need to plane the edges of the Side Slat pieces to custom fit them.

Access for cleaning: If using these projects as nesting cavities for birds (as opposed to indoor decorations), attach the roof with wood screws (no glue) so that it can be removed for cleaning. The remaining parts can be attached with glue and nails.

Drawings of some parts, including the Eaves, Roof pieces, and Side Slats, are not provided. These are simple rectangular-shaped parts cut to the dimensions in the Bill of Materials. The Assembly Drawing gives suggested grain direction for the Roof pieces.

Although not shown, remember to drill ¾" (10mm) air vent holes underneath the roof edges and ¼" (6mm) drain holes in the bottom.

Begin by cutting each of the parts as described below. Then assemble the project according to the Final Assembly instructions and as shown in the Assembly Drawing.

SIDE SLATS: Lay out and cut to size from ¾" (19mm) stock according to the dimensions given in the Bill of Materials. The Side pieces are made by ripping ¼" (6mm) thick slats from ¾" (19mm) solid stock. Rip approximately 20 linear feet (6.1 meters) of Slat material for each Birdhouse. The edges of all slats are sanded slightly round. The edges of the top and bottom Slats will have to be planed to fit. (Sixteen pieces required.)

CHIMNEY TOP: Transfer the pattern onto ¼" (6mm) plywood and cut out. (Two pieces required.)

WINDOW A, WINDOW B: Transfer the pattern onto ¼" (6mm) plywood and cut out.

DOOR: Transfer the pattern onto ¼" (6mm) plywood and cut out. Drill the 1¼" (32mm) diameter hole through.

EAVE A, EAVE B: Lay out and cut to size from ¾" (19mm) stock according to the dimensions in the Bill of Materials.

CHIMNEY: Transfer the pattern onto ¾" (19mm) stock and cut out.

BOTTOM: Lay out and cut to size from ¾" (19mm) stock. Cut the 15° bevels.

TOP: Transfer the pattern onto ¾" (19mm) stock and cut out. Drill the ¾" (19mm) diameter hole through. (Three pieces required.)

ROOF A: Lay out and cut to size from ¾" (19mm) stock according to the dimensions given in the Bill of Materials. Match grain direction with Roof #1B.

ROOF B: Lay out and cut to size from ¾" (19mm) stock according to the dimensions given in the Bill of Materials. Note grain direction.

ROOF C: Lay out and cut to size from ¾" (19mm) stock according to the dimensions given in the Bill of Materials. Match grain direction with Roof #1D.

ROOF D: Lay out and cut to size from ¾" (19mm) stock according to the dimensions given in the Bill of Materials. Note grain direction.

FRONT/BACK: Transfer the pattern onto ¾" (19mm) stock and cut out. Drill the 1¼" (32mm) diameter hole through in the Front piece only. (Two Pieces Required)

SANDING: Finish sand all parts.

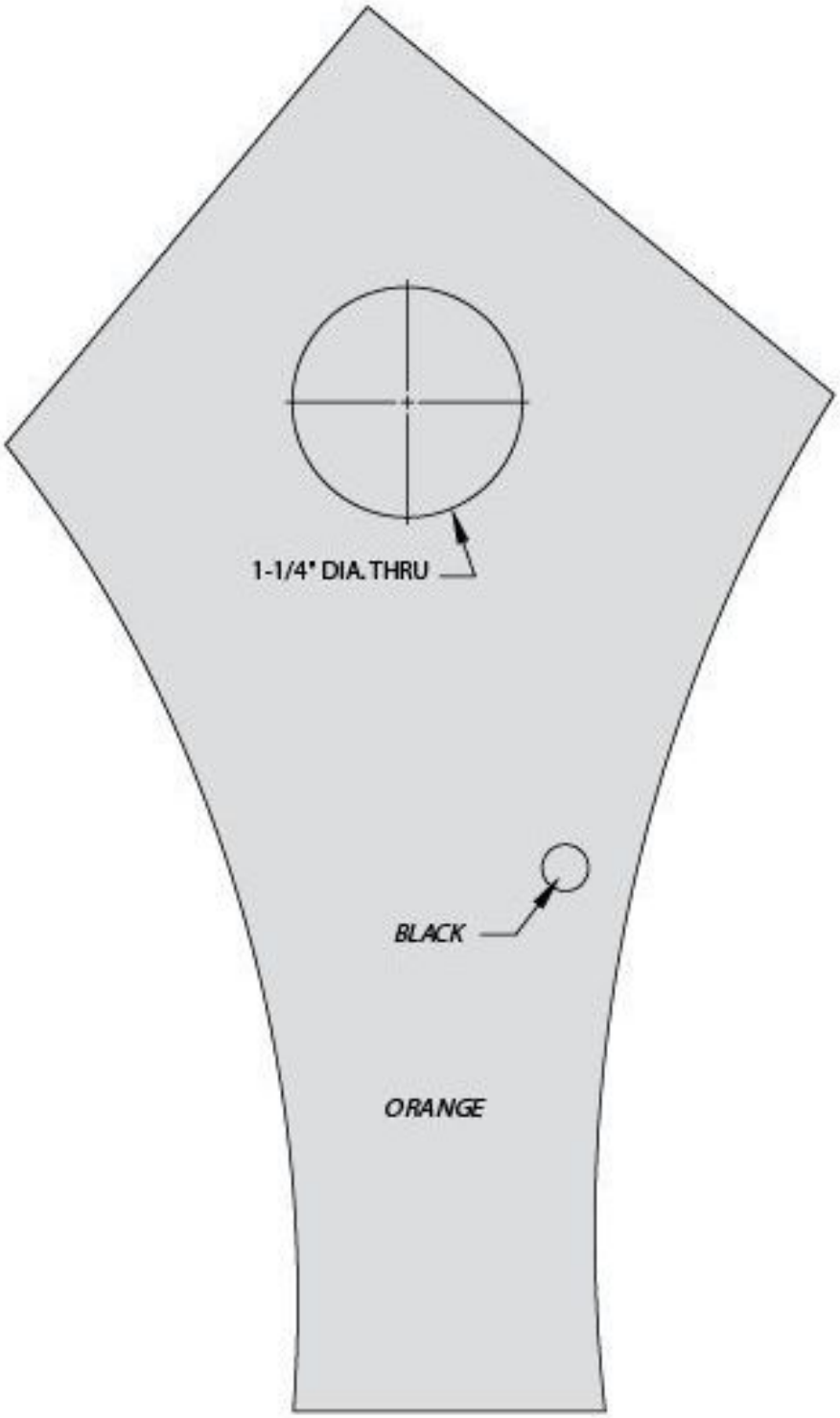
FINAL ASSEMBLY:

Attach the Front and Back to the Bottom where shown. Attach the Side pieces to the edges of the Front and Back (some beveling will be required, especially on the very top and bottom Side pieces). Attach the Roof A and Roof B pieces to the Front and Back (the Roof pieces should fit flush against the back edge of the Birdhouse). If the Birdhouse will be used outdoors (as a nesting cavity) the Roof A & B pieces should be attached with screws so they can be removed for cleaning.

Attach the Windows, Eaves, and Door to the Front piece.

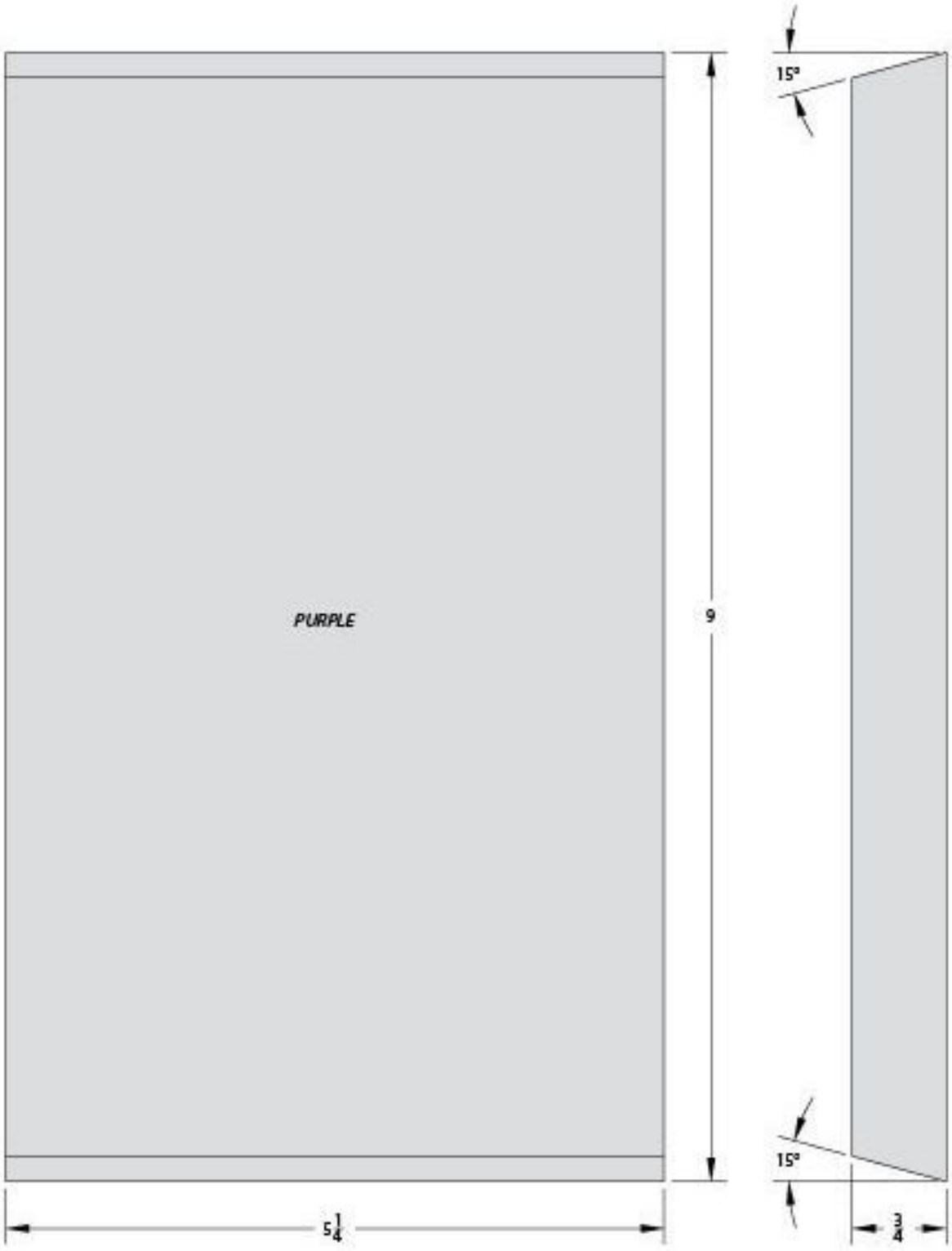
Face-glue the Top pieces together and attach to the Roof A and Roof B pieces 2½" (64mm) from the back edge of the roof. Attach the Chimney Top pieces to the Chimney piece. Glue and screw the Chimney piece to the Roof C piece centered and 2⅝" (67mm) from the bottom edge of the Roof C piece. Attach the Roof C and Roof D pieces to the Top assembly.

FINISHING: Begin by priming the entire project with exterior acrylic latex primer. Paint color recommendations are shown on all of the parts that are drawn. Paint the remaining parts as follows: Paint the Eaves yellow, the Sides pink, and the Roof orange with yellow edges. Use a black paint marker for the windows and door knob. Finish by applying one coat of Clear Satin exterior varnish to the entire project. I like the assortment bright colors available from Delta acrylic craft paints, but use whichever paints may suit you.



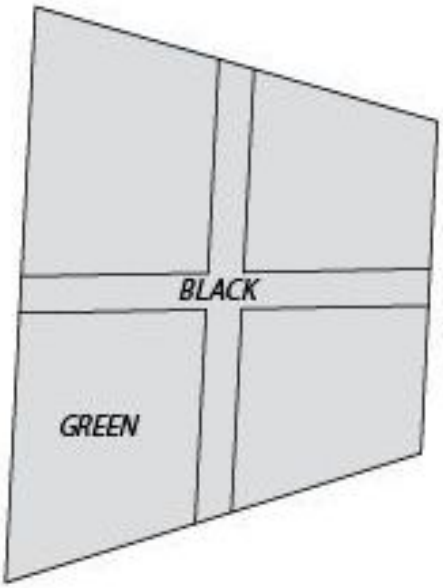
DOOR
½" X 4½" X 7⅝"

PATTERN AT 100%

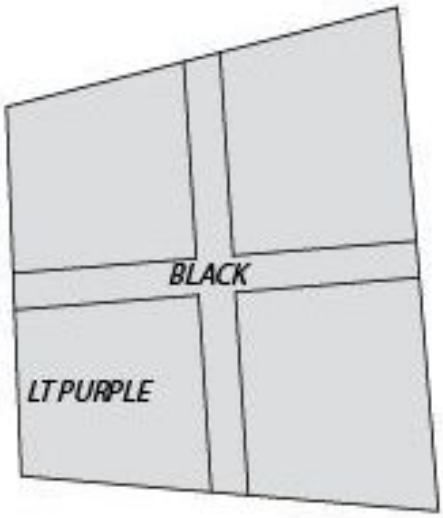


BOTTOM
¾" X 5¼" X 9"

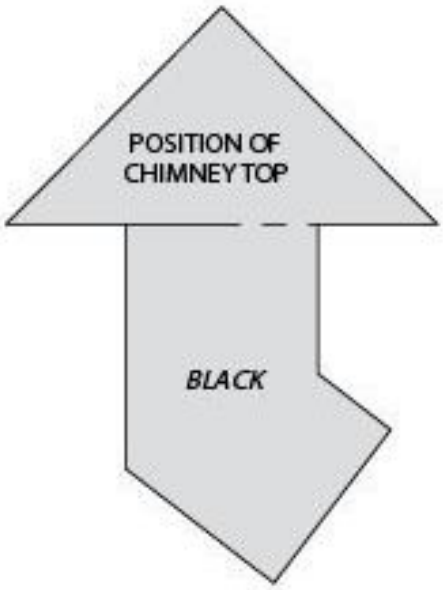
ENLARGE PATTERN 125%



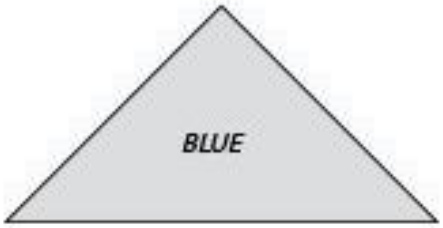
WINDOW A
¼" X 2¼" X 3"



WINDOW B
¼" X 2½" X 2⅝"



CHIMNEY
¾" X 2¼" X 3"



CHIMNEY TOP
½" X 1¾" X 2¼" (2 REQ'D)

PATTERNS AT 100%

BIRD HOUSE

BEAVER BIRDHOUSE

THIS BIRDHOUSE IS A CARTOON DEPICTION OF A POPULAR ANIMAL, THE NORTH AMERICAN BEAVER, ALSO CALLED THE CANADIAN BEAVER. Because it is the national animal of Canada, its image acquires many applications, like the Canadian five-cent piece. It was also the mascot of the 1976 Summer Olympics in Montreal.

Beavers use their powerful jaws and sharp teeth to cut down trees. They use larger trees to make dams and smaller trees as a food source. While cutting trees causes some environmental damage, the resulting ponds benefit other forms of wildlife.

This project emphasizes the beaver's most recognizable features—its large front teeth and distinctive flat tail. The project pictured was finished in a dark wood stain although it could also be finished using brown paint. Distinctive black and white highlights are simple to paint. The finished project measures approximately 19" (483mm) high with a 5" x 6" (127 x 152mm) inside cavity. This cavity size is suitable for chickadees, nuthatches, and titmice. Enlarge the hole to 1½" (38mm) for flycatchers, tree swallows, or warblers.

PLAN OF PROCEDURE

This project is constructed from ¾" (19mm) lumber. It is pictured at left made from pine. Some parts, including the Eyebrow, Eye, Nose, and Tooth pieces are ⅜" (10mm) thick. These pieces can be re-sawn from ¾" (19mm) lumber. Refer to the Cutting Diagram to see how much lumber to purchase and one way to layout the pieces.

Most of the assembly is done with water resistant glue and finishing nails. Do not glue the Back piece to the assembly so you can remove it for cleaning. The plan shows screw clearance holes drilled and countersunk in the Back piece, allowing you to attach the Back piece with #6 x 2" (51mm) screws.

Although not shown, remember to drill ⅜" (10mm) air vent holes underneath the Roof edges, and ¼" (6mm) drain holes in the bottom.

The Roof does not extend over the back of the house. This allows the finished project to be mounted on a flat vertical surface or a vertical wood post. Use a Flush Mount Hanger to attach the house to a post.

Begin by cutting each of the parts as described below. Then assemble the project according to the Final Assembly Instructions and as shown in the Assembly Drawing.

EYEBROW: Transfer the pattern onto ⅜" (10mm) stock and cut out. (Two pieces required.)

EYE: Transfer the pattern onto ⅜" (10mm) stock and cut out. Mark but do not drill the ¼" (6mm) diameter holes for the Plastic Eyes. (Two pieces required.)

NOSE: Transfer the pattern onto ⅜" (10mm) stock and cut out.

TOOTH: Transfer the pattern onto ⅜" (10mm) stock and cut out. (Two pieces required.)

MUZZLE: Transfer the pattern onto ¾" (19mm) stock and cut out.

FRONT FOOT, REAR FOOT, FRONT LEG, REAR LEG: Transfer the pattern onto ¾" (19mm) stock and cut out. (Two pieces each required.)

HEAD FRONT, HEAD BACK: Transfer the pattern onto ¾" (19mm) stock and cut out.

FRONT: Layout and cut to size from ¾" (19mm) stock. Drill the 1¼" (32mm) diameter hole through.

BACK: Transfer the pattern onto ¾" (19mm) stock and cut out. Drill the ⅝" (16mm) diameter air ventilation hole through. Drill the #64" (3.6mm) screw clearance holes through and countersink for screws.

BOTTOM, ROOF A, ROOF B: Layout and cut to size from ¾" (19mm) stock.

SIDE: Layout and cut to size from ¾" (19mm) stock. Cut the 45° bevel. (Two pieces required.)

SANDING: Finish sand all parts.

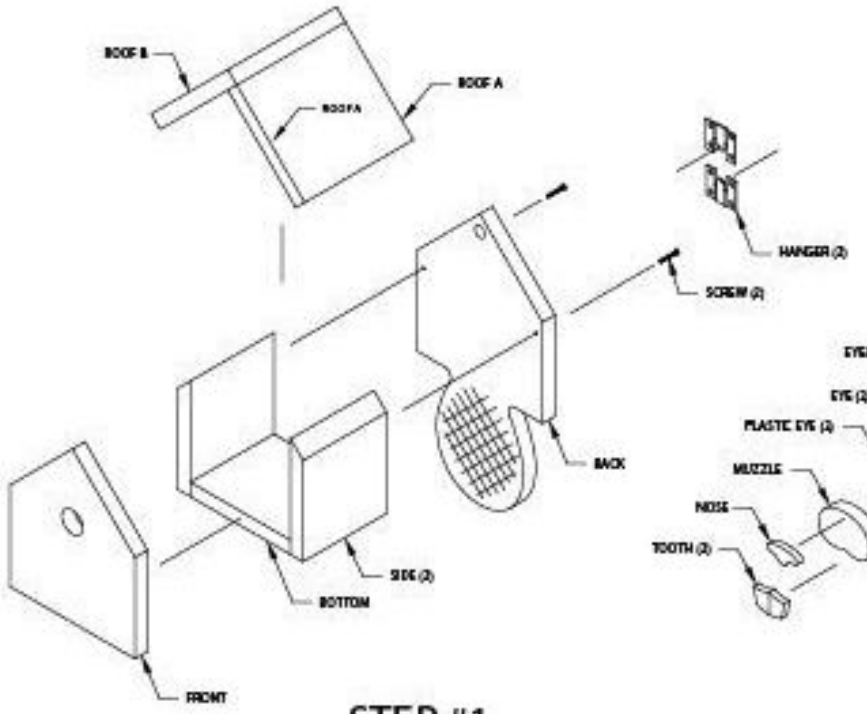
FINAL ASSEMBLY:

STEP 1: Glue and nail the Side pieces to the Bottom piece. Glue and nail the Front piece to the Side and Bottom pieces. Attach the Back piece with screws (no glue). Glue and nail the Roof B piece to the Roof A piece. Glue and nail the Roof A and Roof B assembly to the Front and Side pieces (do not glue to the Back piece). If using a Flush Mount Hanger, drill the screw pilot holes in the Back piece but do not attach until after finishing.

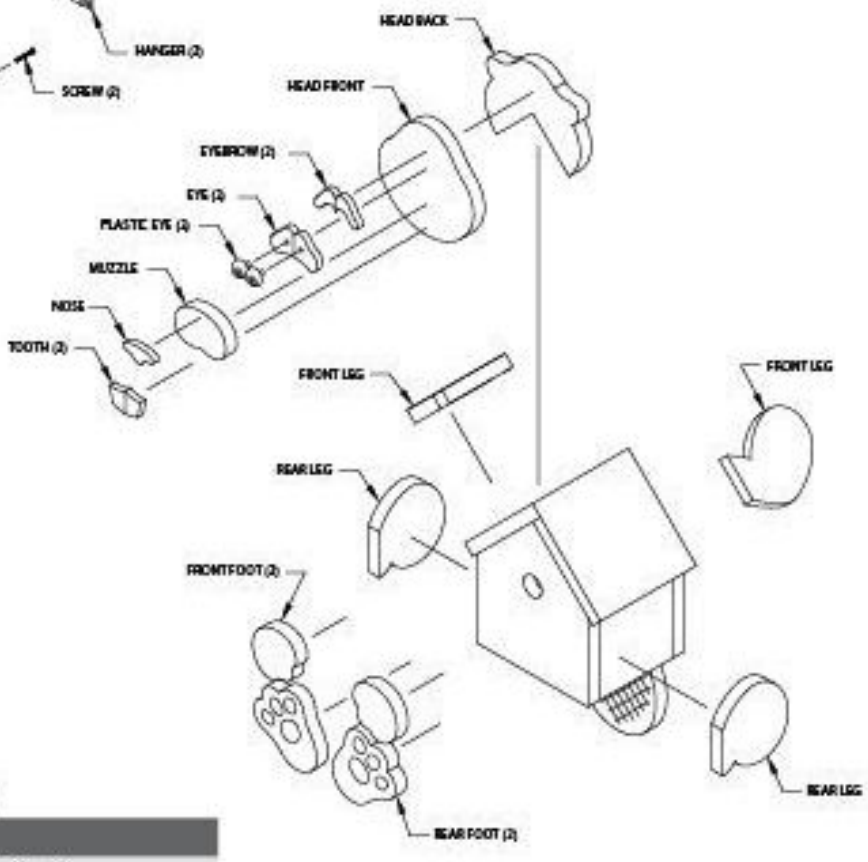
STEP 2: Glue the Eyebrow, Eye, Muzzle, and Tooth pieces to the Head Front where shown (nails optional). Glue the Nose to the Muzzle. Drill the ¼" (6mm) diameter x ¾" (19mm) deep holes through the Eye pieces for the Plastic Eyes. Glue the Head Front to the Head Back. Glue the Head assembly to the birdhouse assembly.

Glue and nail the Front Foot and Rear Foot pieces to the front of the birdhouse assembly where shown on the Front View Drawing. Glue the Front Leg pieces to the Roof pieces butted up against the Front Foot pieces. Glue the Rear Leg pieces to the Side pieces butted up against the Rear Foot pieces. After finishing, install the Plastic Eyes and the Flush Mount Hanger.

FINISHING: This project can be finished with a dark stain like Walnut or Teak, or simply painted brown. Paint the Teeth and Eye pieces white. Paint the Nose and the pads on the Rear Foot black. Use a black paint marker for the crosshatch lines on the tail. Areas to stain or paint are indicated on all parts. Do not paint the inside.



STEP #1



STEP #2

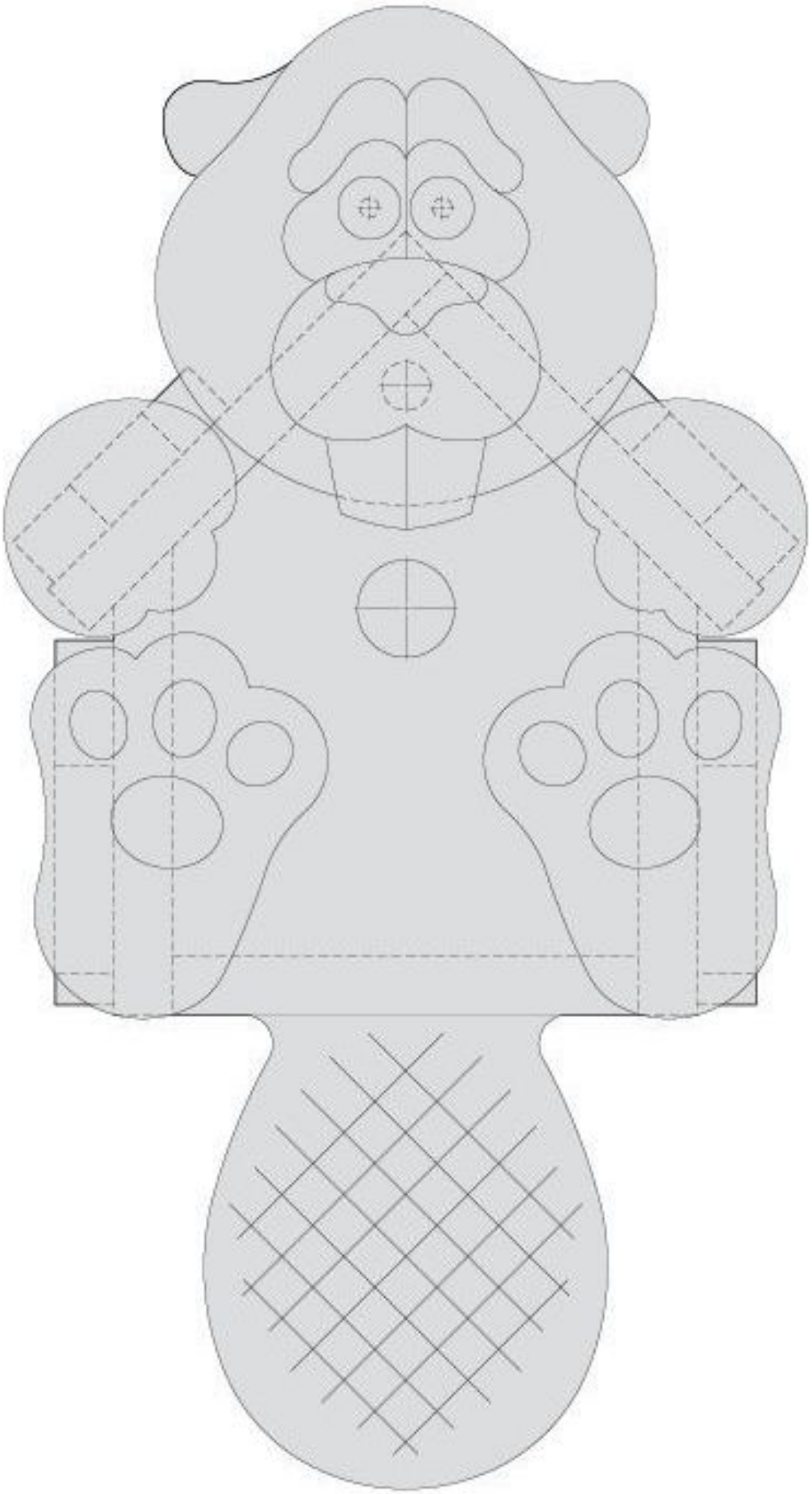
BILL OF MATERIALS

QTY.	PART	SIZE OF MATERIAL
2	Eyebrow	⅜" x 1½" x 1½" (10 x 38 x 38mm)
2	Eye	⅜" x 1⅝" x 1⅝" (10 x 41 x 48mm)
1	Nose	⅜" x 1" x 2⅛" (10 x 25 x 54mm)
2	Tooth	⅜" x 1" x 1⅜" (10 x 25 x 35mm)
1	Muzzle	¾" x 2⅜" x 3½" (19 x 60 x 89mm)
2	Front Foot	¾" x 3" x 3⅛" (19 x 76 x 79mm)
2	Rear Foot	¾" x 3⅞" x 5" (19 x 99 x 127mm)
2	Front Leg	¾" x 3¼" x 3½" (19 x 83 x 89mm)
2	Rear Leg	¾" x 4⅜" x 4¾" (19 x 111 x 121mm)
1	Head Front	¾" x 6½" x 6½" (19 x 165 x 165mm)
1	Head Back	¾" x 6⅜" x 6½" (19 x 162 x 165mm)
1	Front	¾" x 7½" x 9" (19 x 191 x 229mm)
1	Back	¾" x 7½" x 15⅛" (19 x 191 x 384mm)
1	Bottom	¾" x 5" x 6" (19 x 127 x 152mm) (not shown)
2	Side	¾" x 5" x 6" (19 x 127 x 152mm)
1	Roof A	¾" x 5¾" x 6½" (19 x 146 x 165mm) (not shown)
1	Roof B	¾" x 6½" x 6½" (19 x 165 x 165mm) (not shown)
*2	Plastic Eye	⅞" (21mm) Dia. (#8437)
2	Exterior Screw	2" (51mm) x #6
*1	Flush Mount Hanger	(#1262)

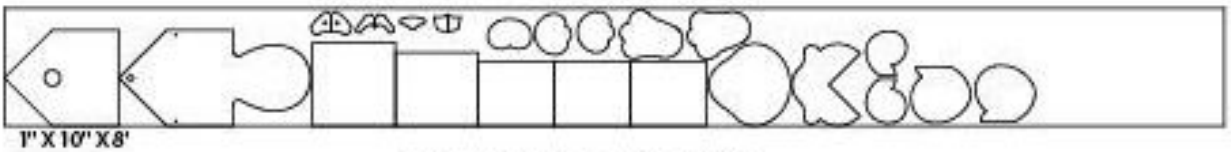
PAINT

Exterior Acrylic Latex Primer and Gloss or Semi-Gloss Exterior Acrylic Latex paint.

QTY.	GENERIC COLOR
1	Brown, White, Black



FRONT VIEW

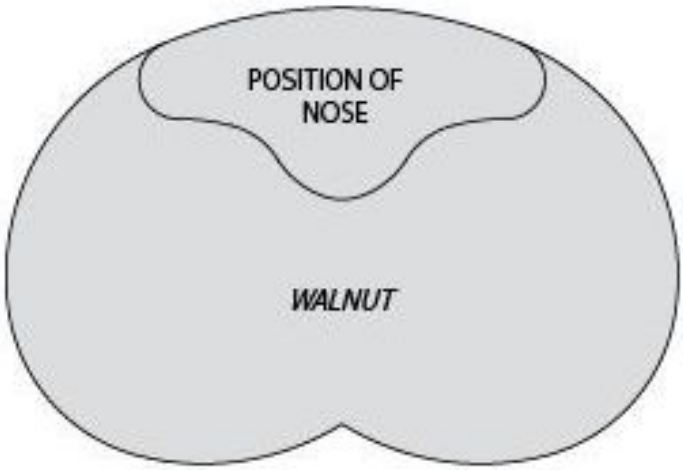


1" X 10" X 8'

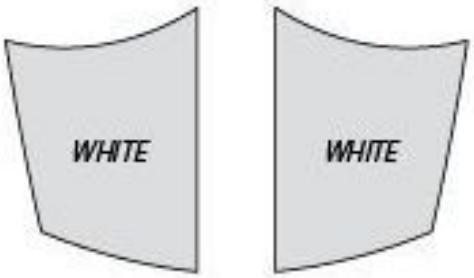
CUTTING DIAGRAM

EYEBROW
⅜" X 1½" X 1½" (2 REQ'D)

NOSE
¾" X 1" X 2½"

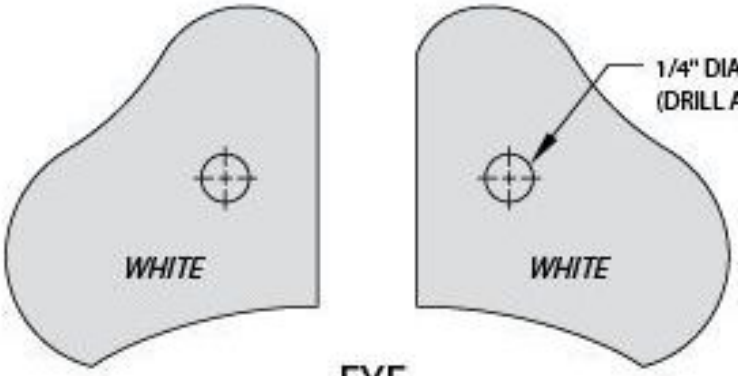


MUZZLE
¾" X 2¾" X 3½"

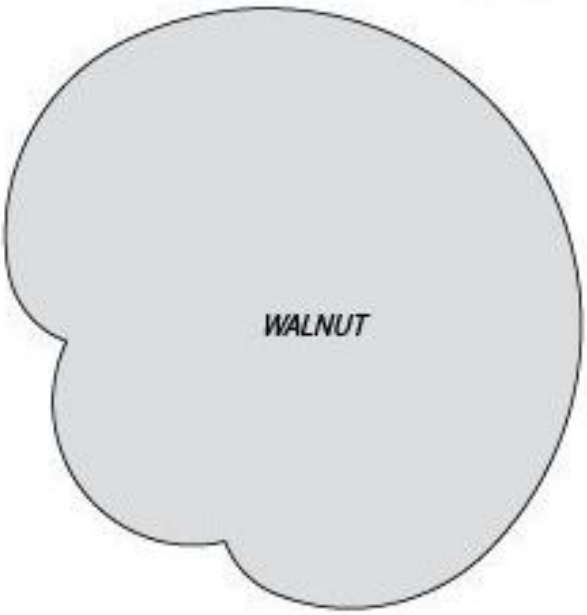


TOOTH
¾" X 1" X 1¾" (2 REQ'D)

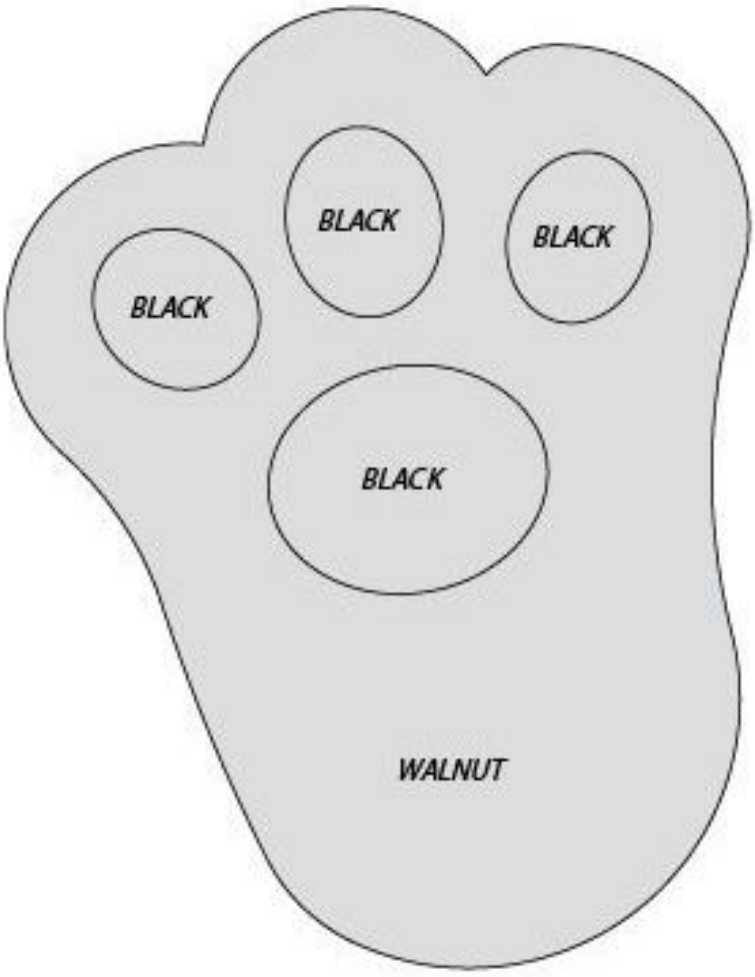
PATTERNS AT 100%



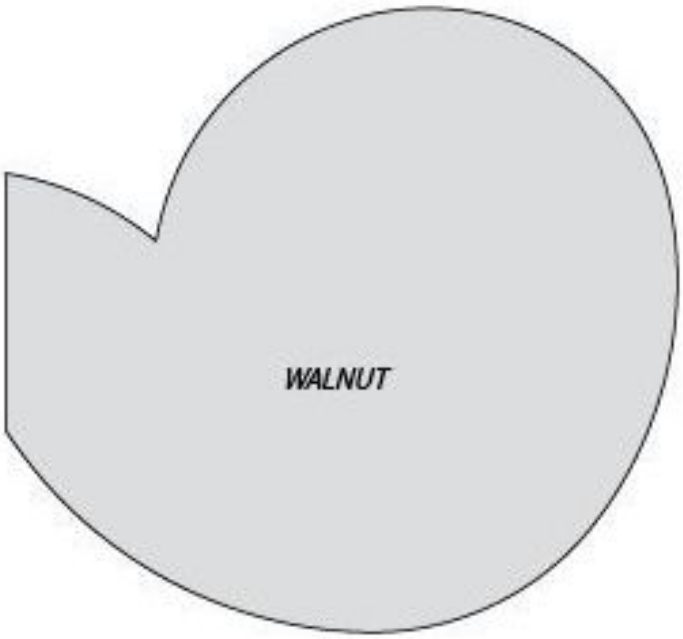
EYE
¾" X 1½" X 1⅞" (2 REQ'D)



FRONT FOOT
¾" X 3" X 3½" (2 REQ'D)

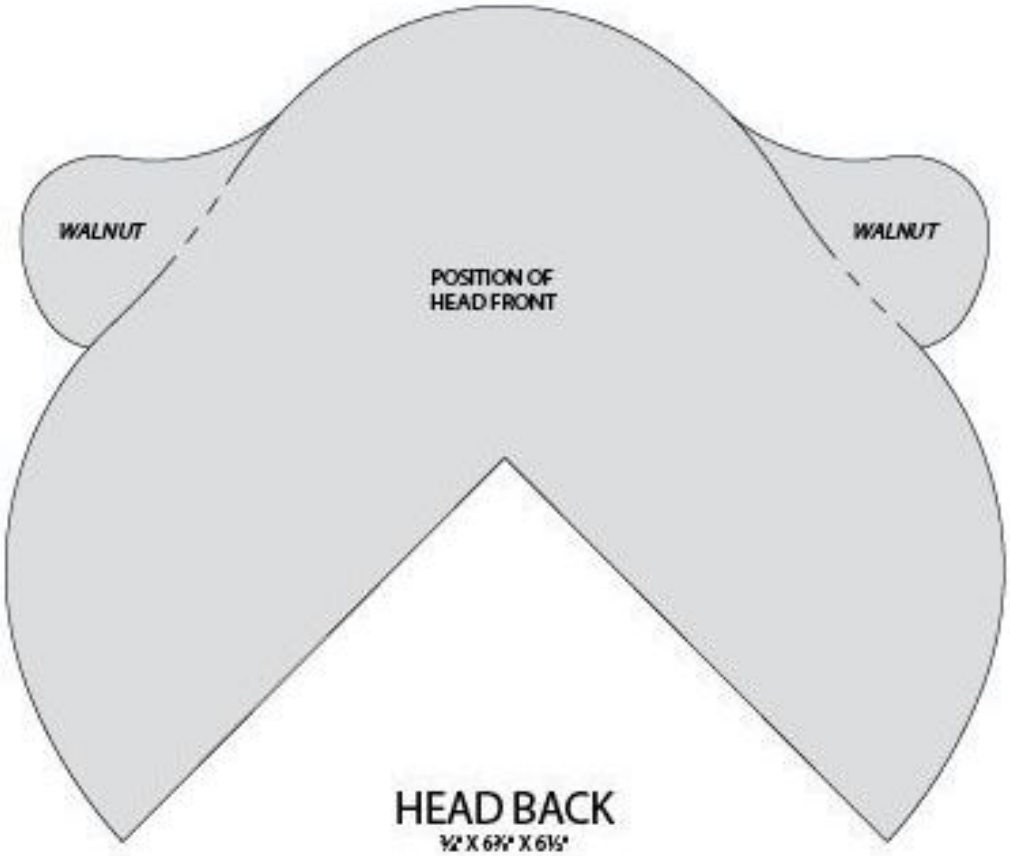


REAR FOOT
¾" X 3½" X 5" (2 REQ'D)



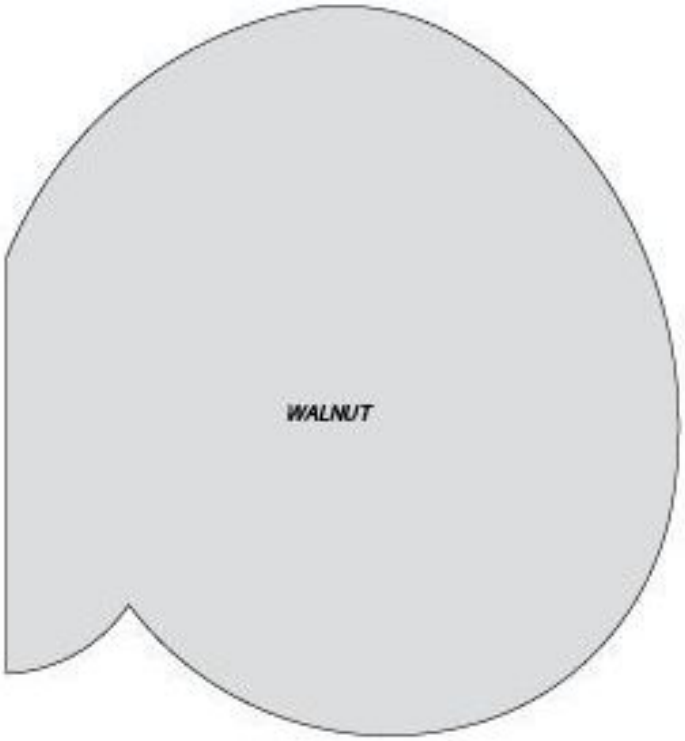
FRONT LEG
¾" X 3½" X 3½" (2 REQ'D)

PATTERNS AT 100%



HEAD BACK

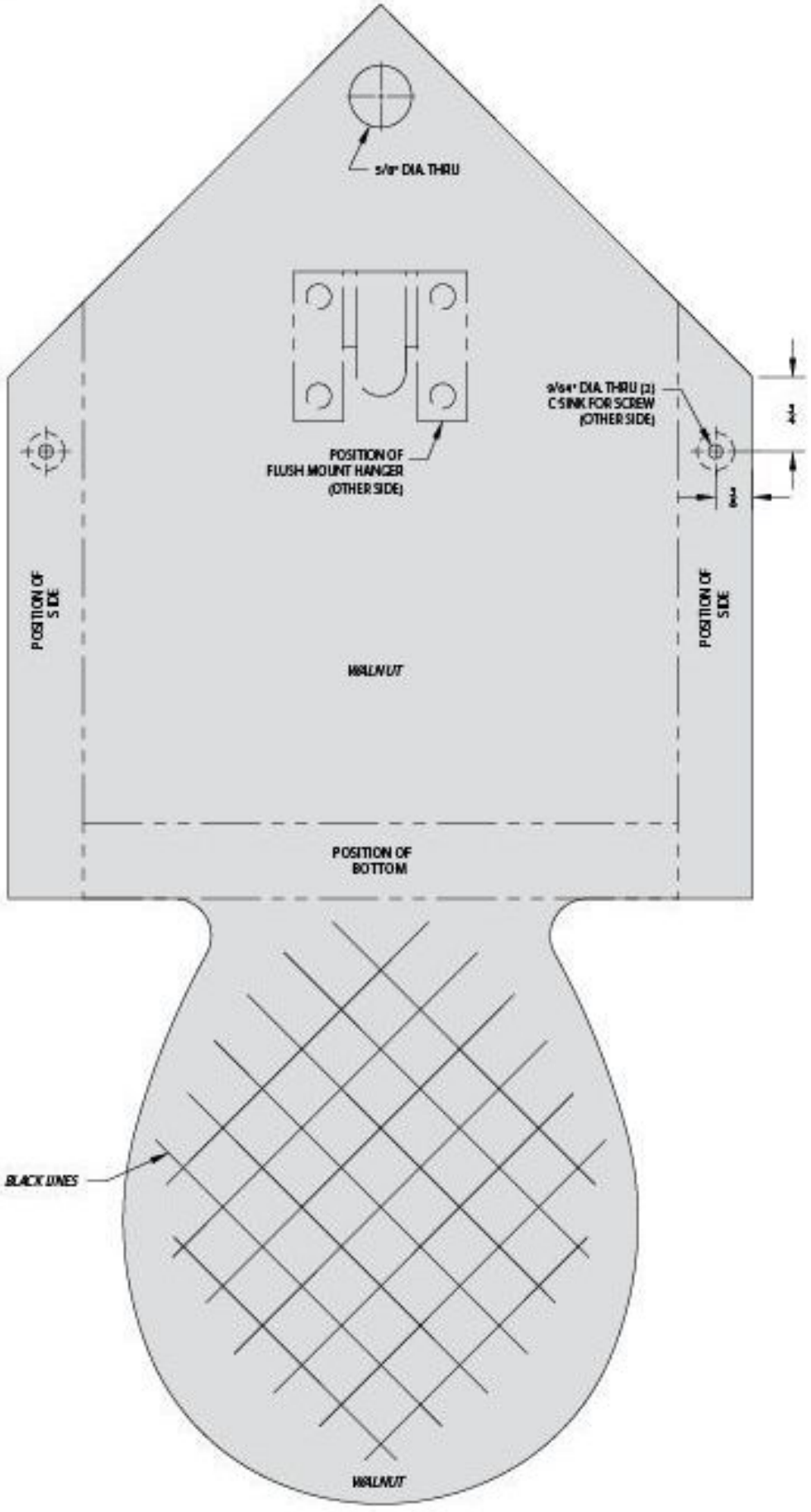
½" X 6¾" X 6½"



REAR LEG

½" X 4⅜" X 4½" (2 REQ'D)

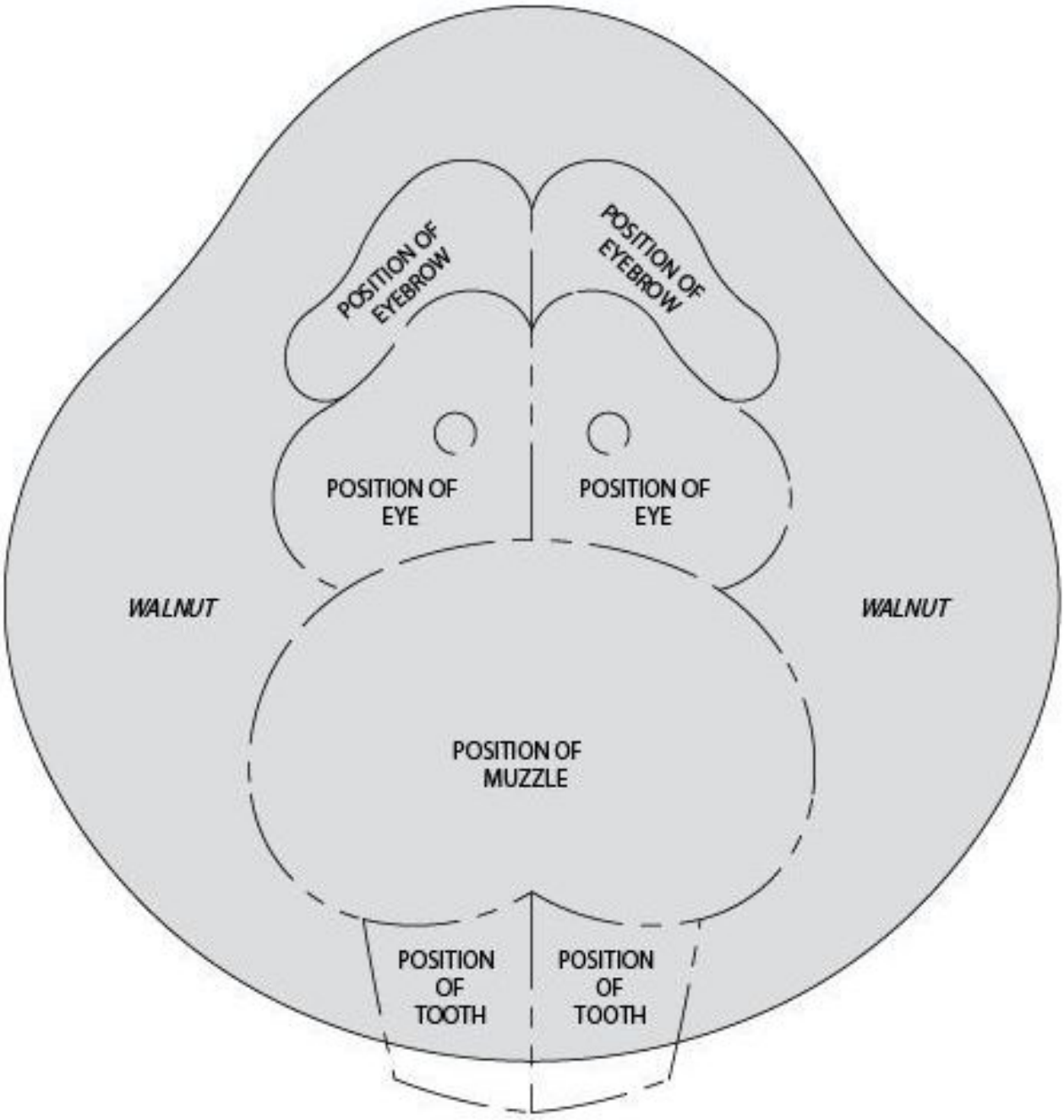
ENLARGE PATTERNS 125%



BACK

¾" X 7½" X 15⅞"

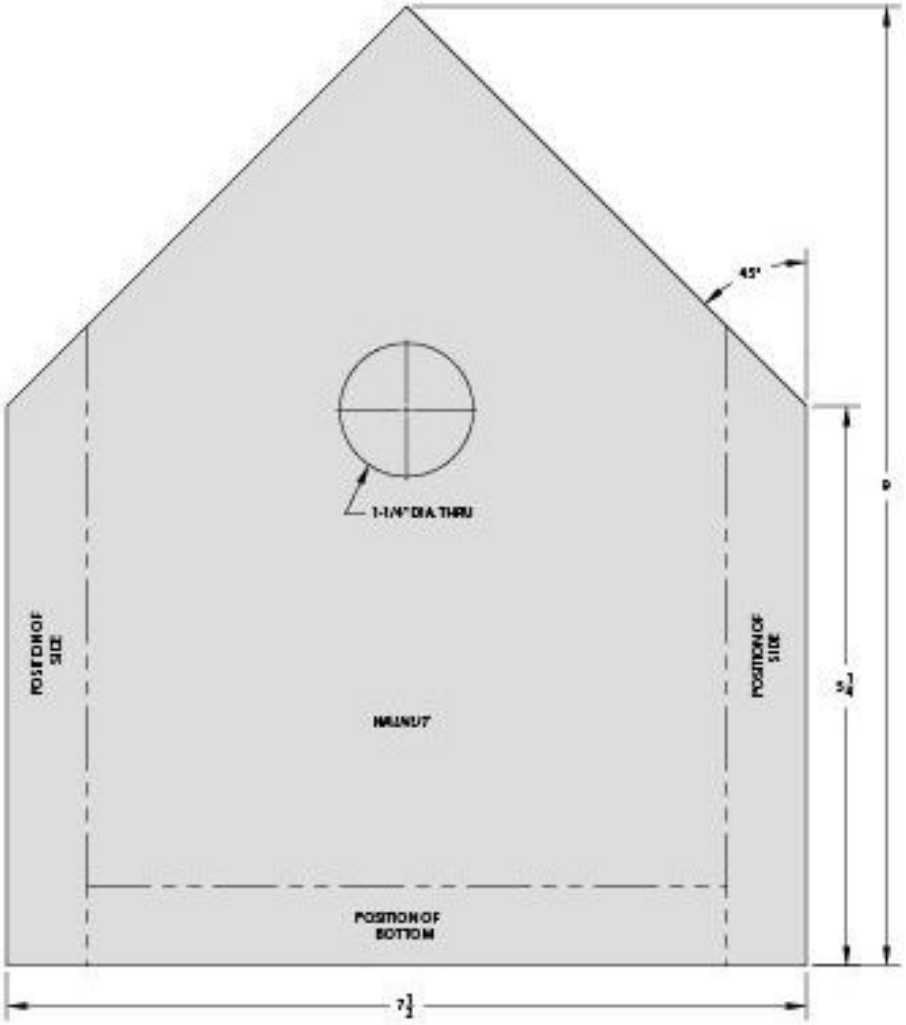
ENLARGE PATTERN 160%



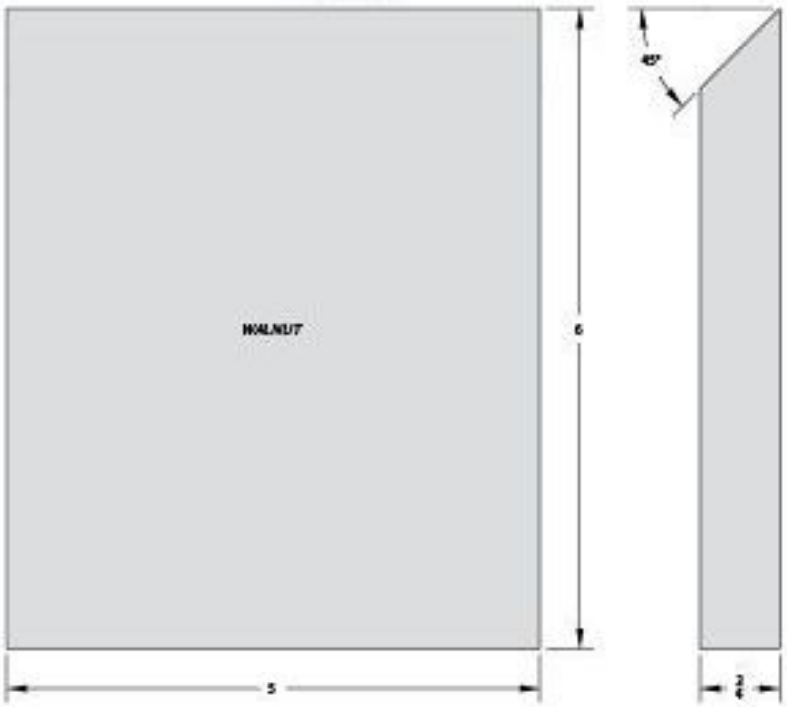
HEAD FRONT

¾" X 6½" X 6½"

PATTERN AT 100%



FRONT
3/4" X 7-1/2" X 9"



SIDE
3/4" X 5" X 6"
(2 REQ'D)

ENLARGE PATTERNS 180%

BIRD HOUSE

ROOSTER BIRDHOUSE

JUST LIKE THE BARNYARD ROOSTER, THIS ONE SITS ON A HIGH PERCH SO HE CAN WATCH OVER HIS FLOCK. You might think of it as a "twin home," as it has a divider and an entry hole on each side so it can accommodate two families of chickadees or wrens. For larger birds omit the center divider, one of the entrance holes, and enlarge the remaining entrance hole to make a single-family home with a larger nesting cavity to attract finches, flycatchers, or tree swallows. The finished project measures 16" (406mm) high.

PLAN OF PROCEDURE

This project is constructed from ¾" (19mm) lumber. Assembly is done with water resistant glue, nails, and screws. The Cutting Diagram shows one way to layout the parts and the minimum amount of lumber to purchase. The Body pieces are attached with screws (no glue) so they can be removed to clean out old nests.

The project has been designed with a 1¼" (32mm) diameter entrance hole on each side and two nesting cavities measuring approximately 3½" x 4½" (89 x 114mm). Using a thinner piece of wood for the Divider will increase the cavity size slightly. By omitting the Divider and making one larger entrance hole, the project can house one family of larger birds.

Although not shown, be sure to drill ⅜" (10mm) air vent holes underneath the roof edges and ¼" (6mm) drain holes in the Bottom piece.

Begin by cutting each of the parts as described below. Then assemble the project according to the Final Assembly Instructions and as shown in the Assembly Drawing.

HEAD CENTER, TAIL CENTER: Transfer the pattern onto ¾" (19mm) stock and cut out. Drill the 7/64" (2.8mm) diameter x 1¼" (32mm) deep pilot holes on center where shown.

HEAD SIDE: Transfer the pattern onto ¾" (19mm) stock and cut out. Drill the 3/16" (5mm) diameter hole through for the Plastic Eyes. (Two pieces required.)

TAIL SIDE: Transfer the pattern onto ¾" (19mm) stock and cut out. (Two pieces required.)

WING: Transfer the pattern onto ¾" (19mm) stock and cut out. Drill the 1¼" (32mm) diameter hole through. (Two Pieces Required)

BODY: Transfer the pattern onto ¾" (19mm) stock and cut out. Drill the 9/64" (3.6mm) diameter shank clearance holes through and countersink for screws. Drill the 2½" (64mm) diameter hole through. (Two pieces required.)

DIVIDER: Layout and cut to size from ¾" (19mm) (or thinner) stock.

ROOF: Layout and cut to size from ¾" (19mm) stock. Cut the 35° bevel. Drill the 9/64" (3.6mm) diameter shank clearance holes through and countersink for screws. (Two pieces required.)

SIDE: Layout and cut to size from ¾" (19mm) stock. Cut the 15° and 20° bevels. Drill the 7/64" (2.8mm) diameter x 1¼" (32mm) deep pilot holes on center where shown. (Two pieces required.)

BOTTOM: Layout and cut to size from ¾" (19mm) stock. Cut the 15° bevels.

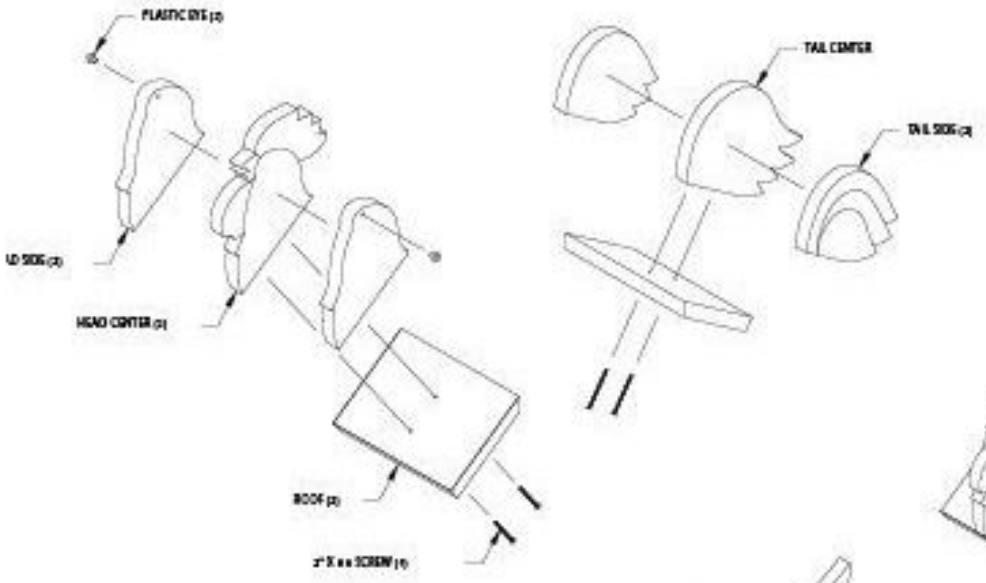
SANDING: Finish sand all parts.

FINAL ASSEMBLY:

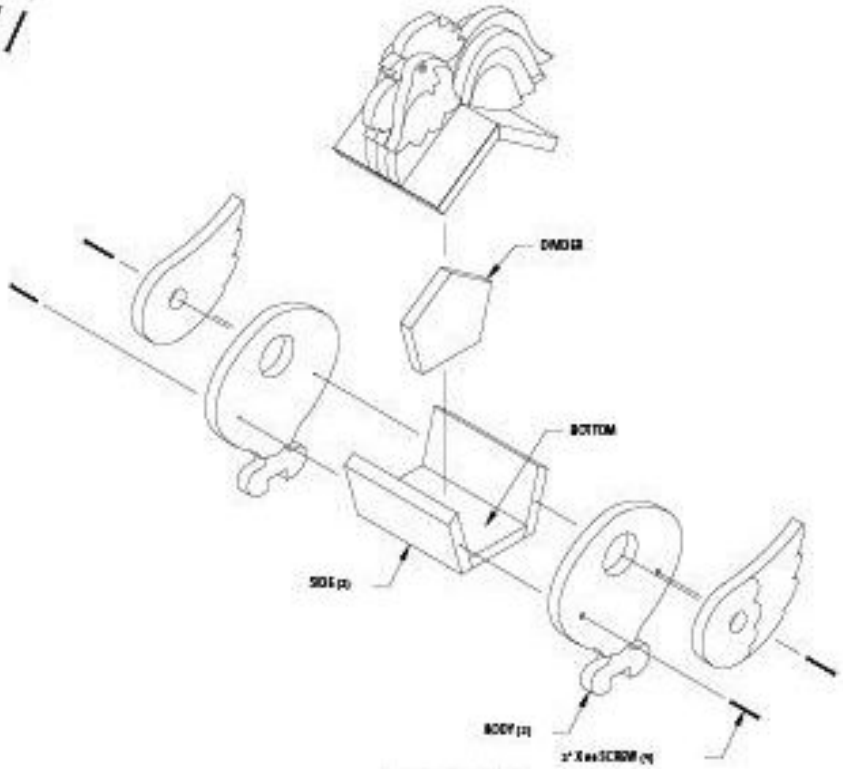
STEP 1: Glue and nail the Head Side pieces to the Head Center piece. Glue and nail the Tail Side pieces to the Tail Center piece. Attach the Head assembly and Tail Assembly to the Roof pieces with 2" (51mm) x #6 Screws.

STEP 2: Glue and nail the Side pieces to the Bottom piece. Glue and nail the Divider piece to the Side/Bottom assembly, centered from end to end. Attach the Roof pieces to the Side and Divider pieces. Glue and nail the Wing pieces to the Body pieces. Attach the Body pieces to the Side pieces with 2" (51mm) x #6 Screws (no glue). Do not install the Plastic Eyes until after final finishing.

FINISHING: Exterior acrylic latex primer and house paint work well for painting this project. I like the Delta craft paints for the top coat with Delta exterior clear varnish. But choose a paint brand that suits you. Paint color suggestions are indicated on all parts. Do not paint the inside of the project.



STEP #1



STEP #2

BILL OF MATERIALS

QTY.	PART	SIZE OF MATERIAL
1	Head Center	¾" x 7" x 8¾" (19 x 178 x 222mm)
2	Head Side	¾" x 5⅛" x 7¼" (19 x 130 x 184mm)
1	Tail Center	¾" x 6¾" x 7½" (19 x 171 x 194mm)
2	Tail Side	¾" x 5½" x 6" (19 x 140 x 152mm)
2	Wing	¾" x 6⅝" x 7½" (19 x 168 x 194mm)
2	Body	¾" x 9¼" x 11⅛" (19 x 235 x 283mm)
1	Divider	¾" x 5½" x 6⅛" (19 x 140 x 154mm)
2	Roof	¾" x 5½" x 7¾" (19 x 140 x 197mm)
2	Side	¾" x 4¼" x 7¾" (19 x 108 x 197mm)
1	Bottom	¾" x 4¼" x 7¾" (19 x 108 x 197mm)
*2	Plastic Eye	½" (13mm) Dia. (#8866)
6	Screw	2" (51mm) x #6

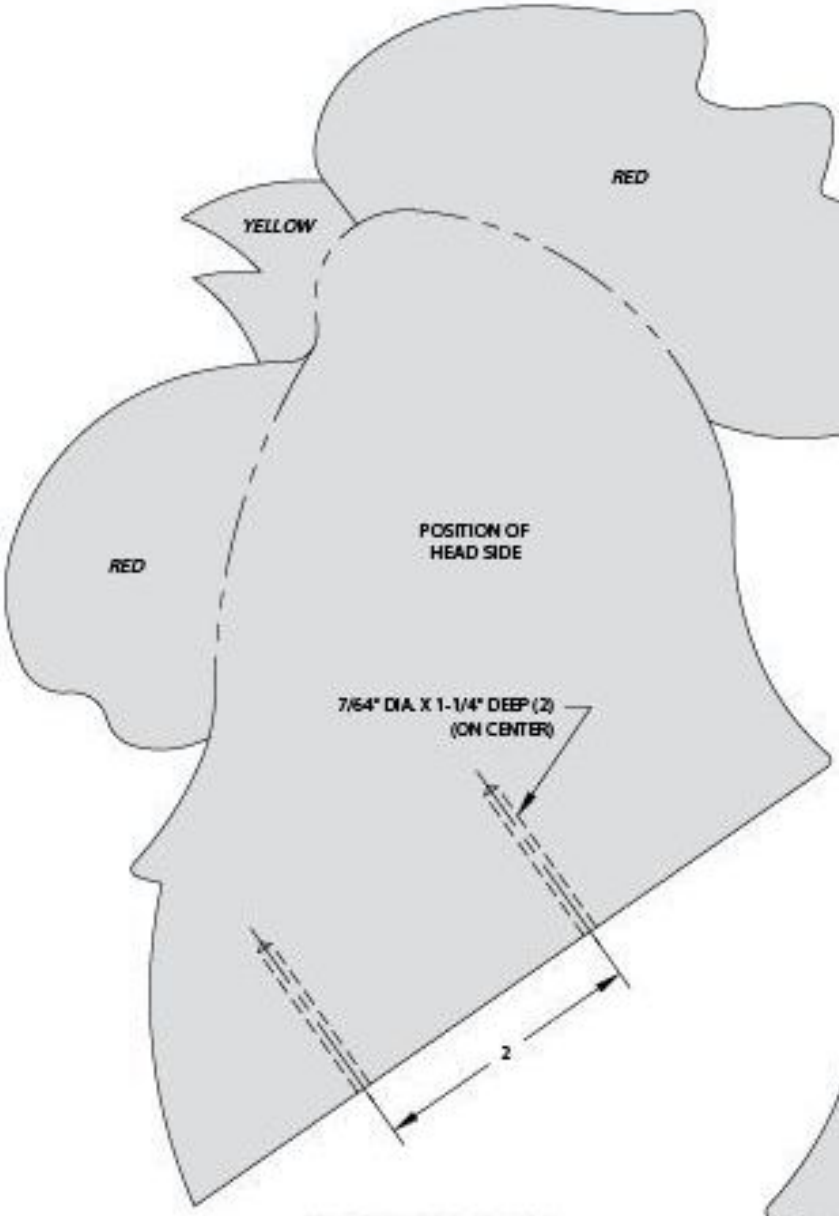
PAINT

Acrylic paint is recommended.

QTY.	GENERIC COLOR	PART NUMBER
1	Red	2 oz. (Delta #02507)
1	Yellow	2 oz. (Delta #02509)
1	Blue	2 oz. (Delta #02508)
1	Green	2 oz. (Delta #02068)
1	Tan	2 oz. (Delta #02054)
1	Brown	2 oz. (Delta #02030)
1	Exterior/Interior Varnish, Satin	8 oz. (Delta #07003)

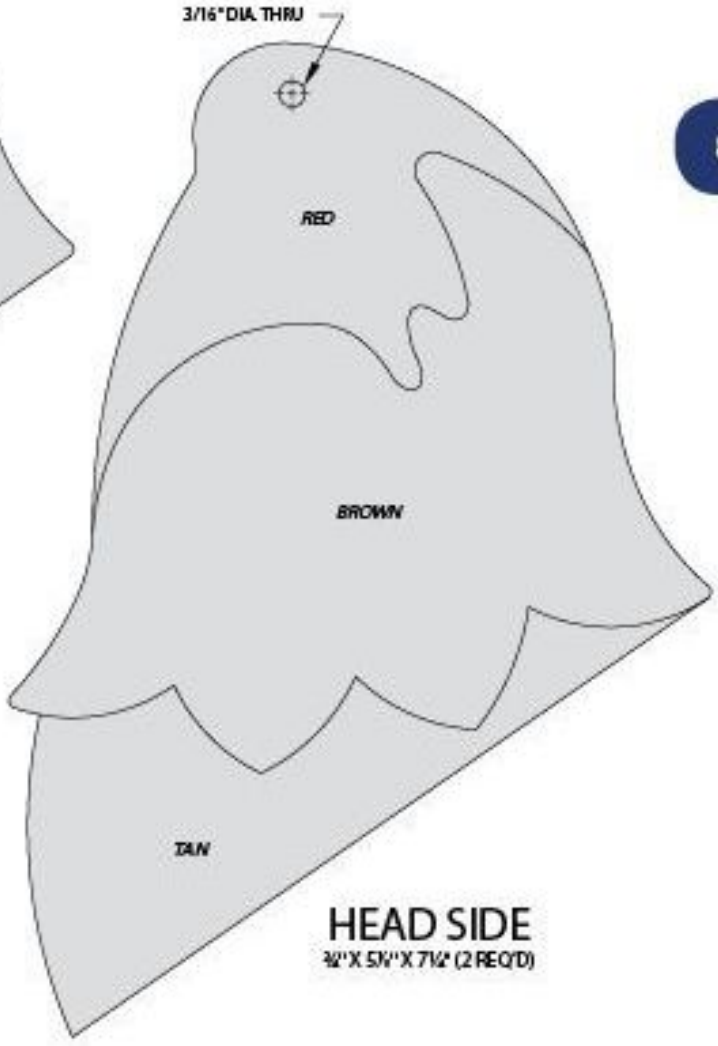
1" X 10" x 8'

CUTTING DIAGRAM



HEAD CENTER

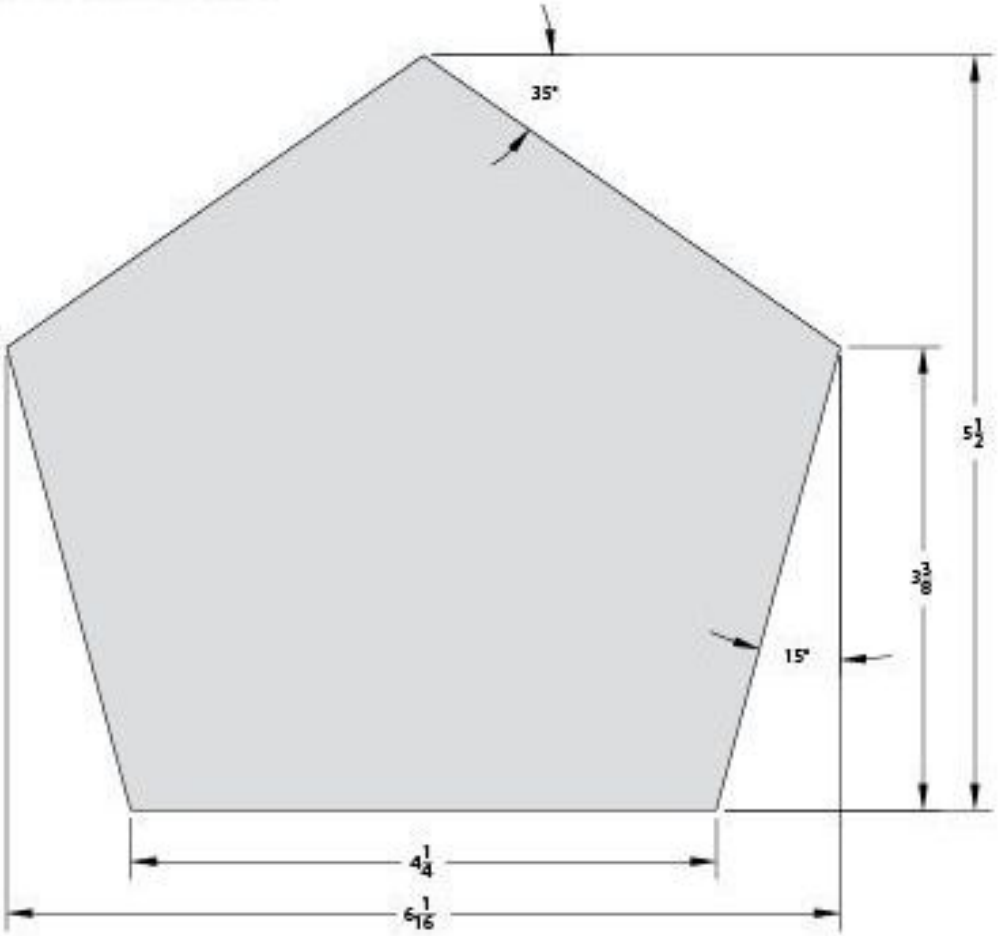
¾" X 7" X 8¼"



HEAD SIDE

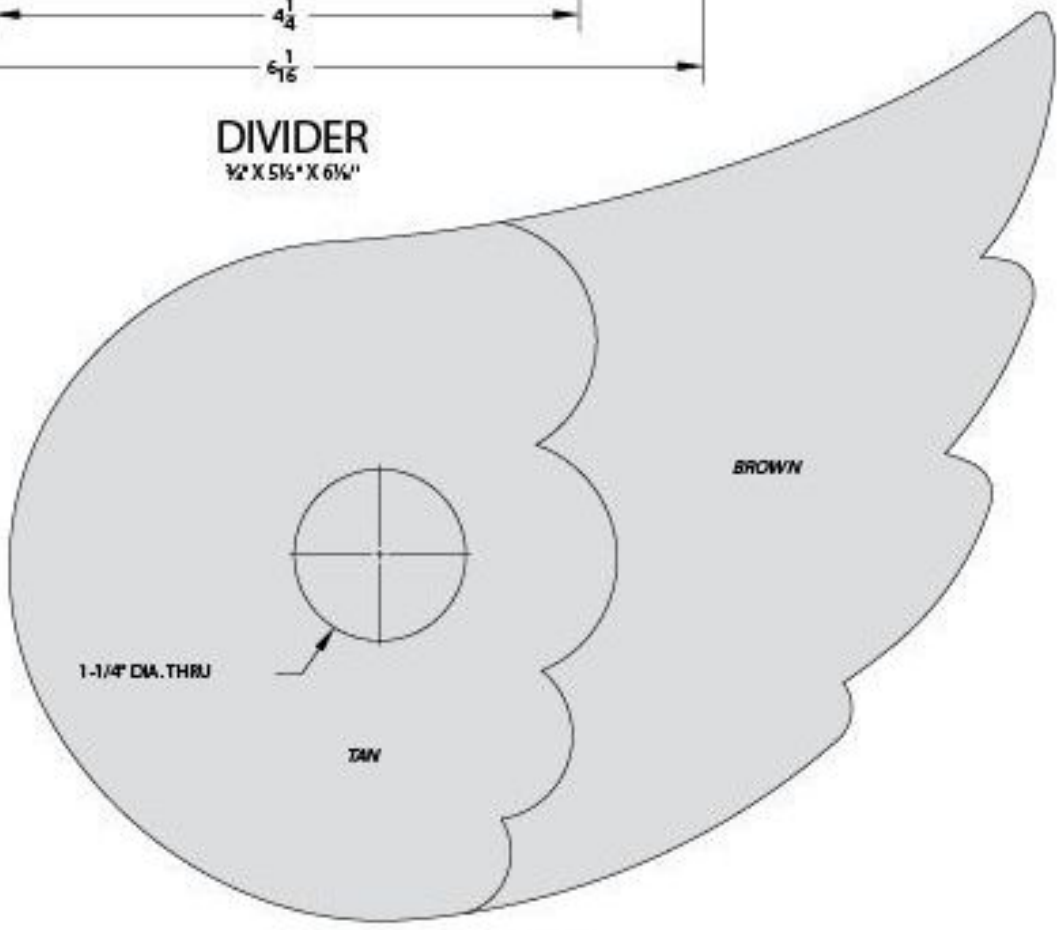
¾" X 5¼" X 7¼" (2 REQ'D)

ENLARGE PATTERNS 140%



DIVIDER

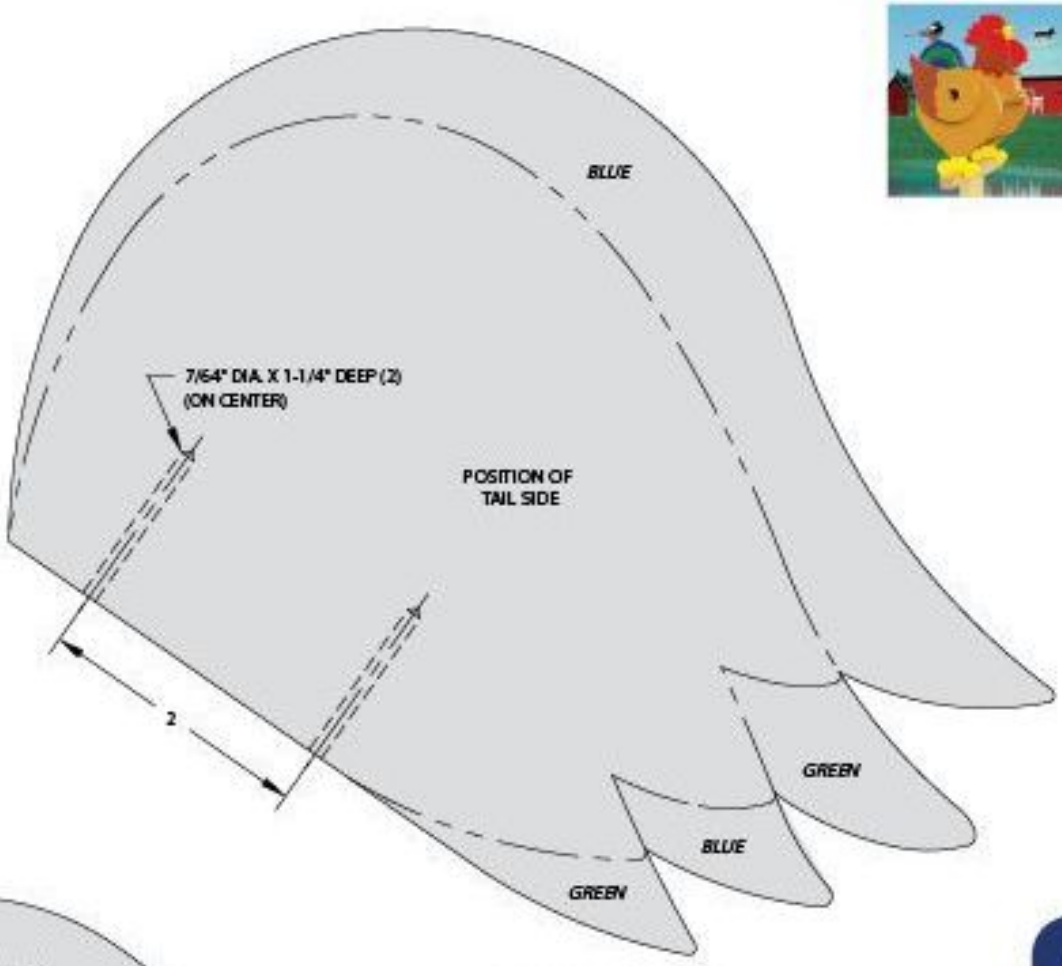
½" X 5⅛" X 6 1/16"



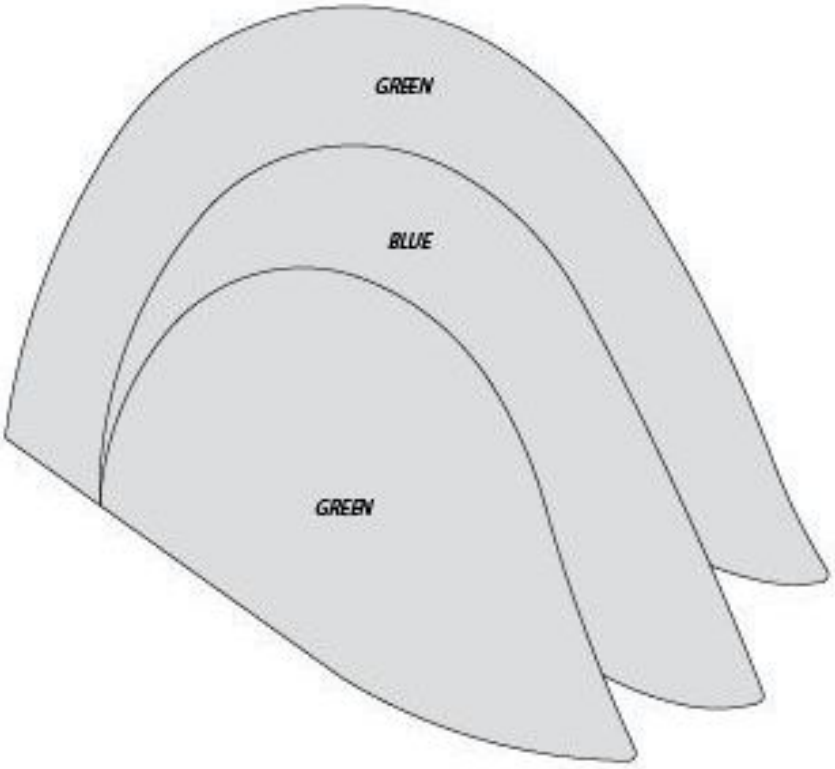
WING

¾" X 6⅞" X 7⅛" (2 REQ'D)

ENLARGE PATTERNS 140%

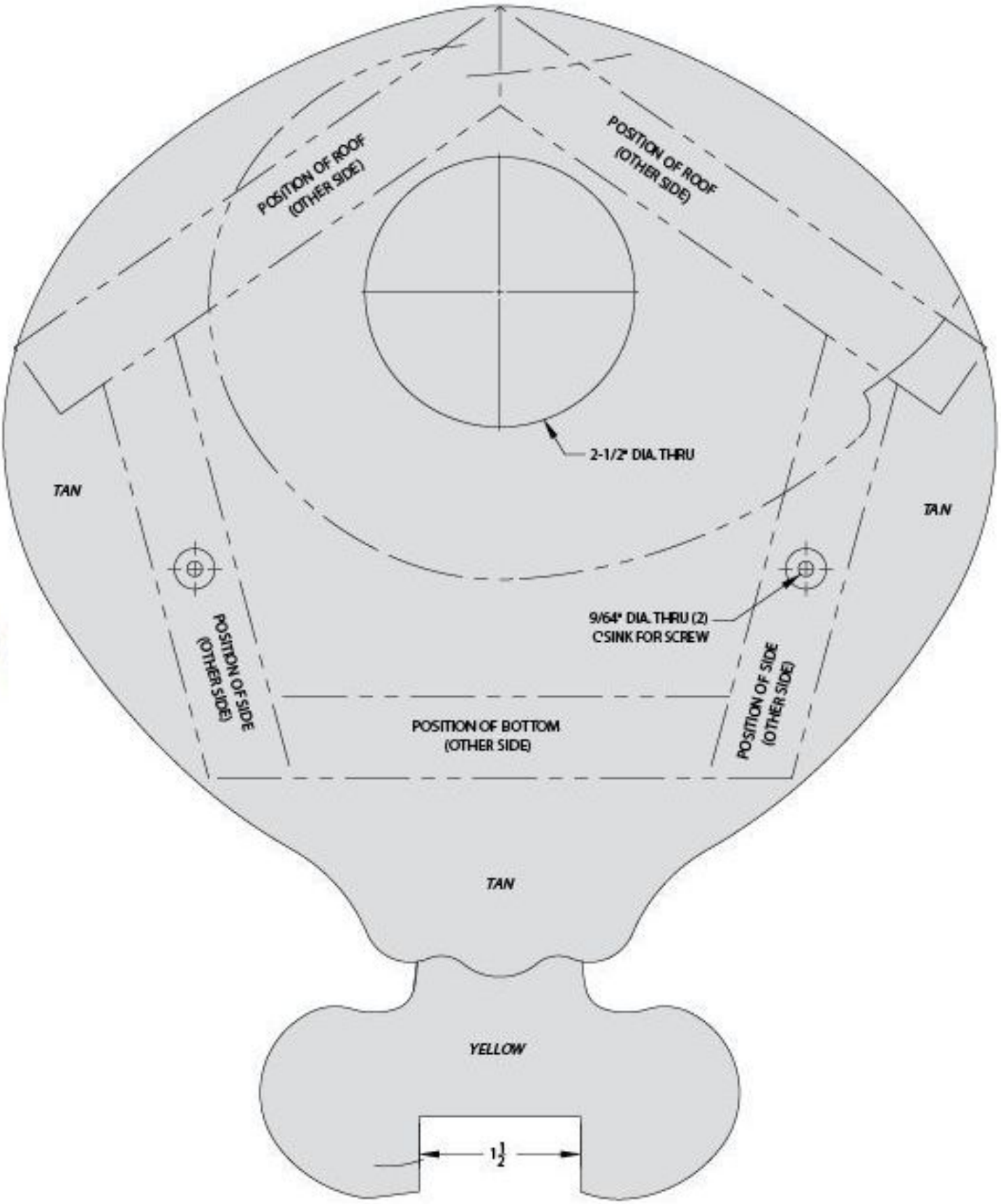


TAIL CENTER
¾" X 6½" X 7½"



TAIL SIDE
½" X 5½" X 6" (2 REQ'D)

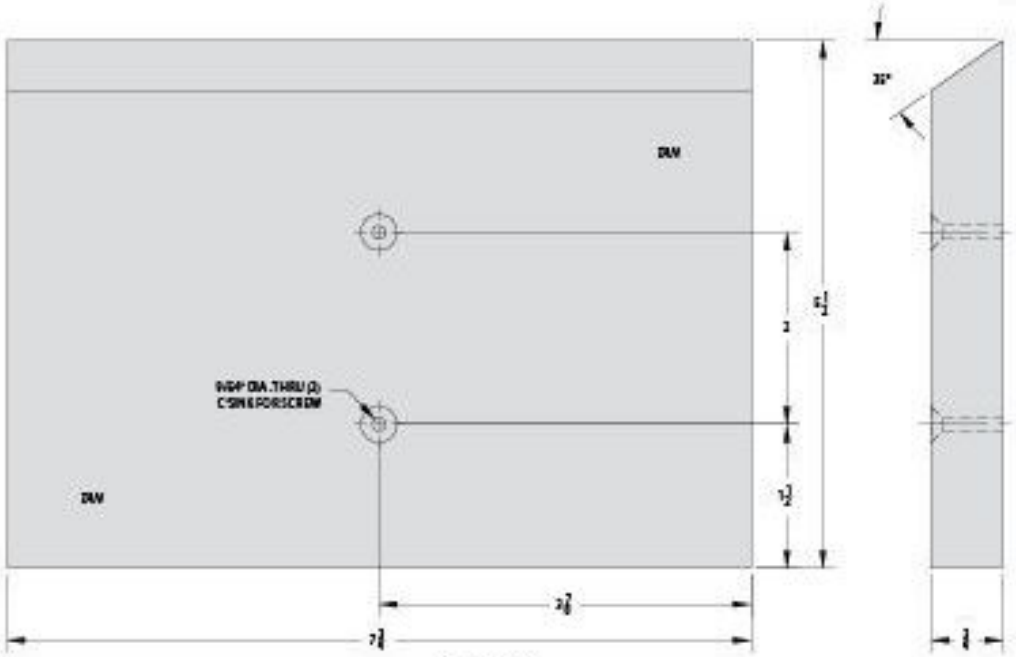
ENLARGE PATTERNS 140%



BODY

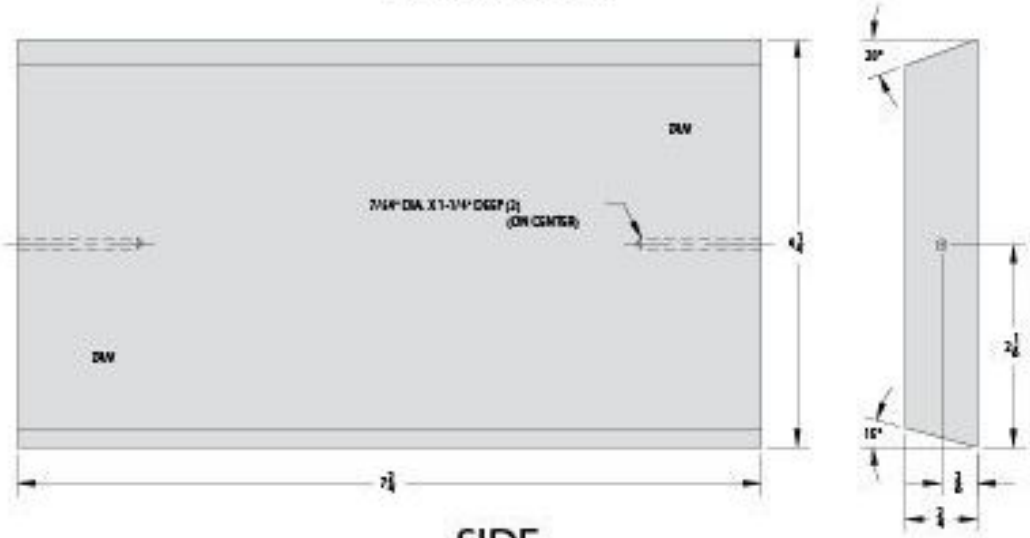
¾" X 9½" X 11¾" (2 REQ'D)

ENLARGE PATTERN 125%



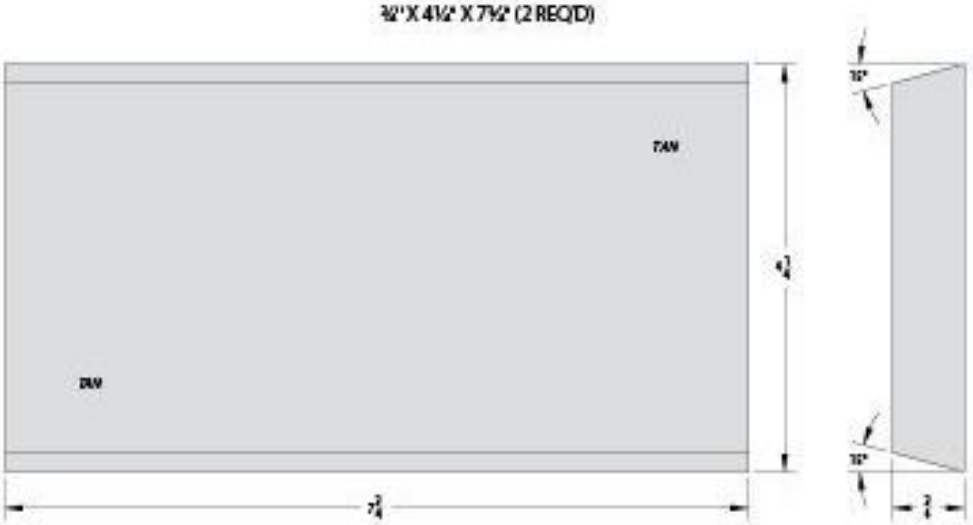
ROOF

¾" X 5½" X 7½" (2 REQ'D)



SIDE

¾" X 4½" X 7½" (2 REQ'D)



BOTTOM

¾" X 4½" X 7½"

ENLARGE PATTERNS 200%

CARDINAL BIRD FEEDER

CARDINALS ARE PERHAPS THE MOST COLORFUL BIRD YOU CAN EXPECT TO VISIT YOUR FEEDER. That's why I selected one for this project. As an added bonus, this bird is one of the easiest to paint for those of you who don't fancy yourselves as decorative painters!

A nice feature of this feeder is that it uses a recycled soda bottle to hold the seed. One-liter widemouthed bottles can be found at most convenience stores. The bottle is positioned upside down so the seed will flow through the wide mouth. The bottom of the bottle, which will be on top, is cut off, forming an opening slightly larger that 3" (76mm) for easy refilling. The cardinal's head is attached with hinges. Just swing the head back and pour in the seeds!

If you're wondering if this feeder will scare the birds, don't worry. Whichever blend of seed I tried, the birds attracted to that blend would soon show up to get their share.

The finished project measures 7" (178mm) wide x 21" (533mm) high.

PLAN OF PROCEDURE

This project is constructed from ¾" (19mm) stock. It is assembled with glue and nails or screws as desired.

The best place to find a one-liter widemouthed plastic soda bottle is at a convenience store. You can usually buy just one instead of the whole six-pack. Or you might check the trash bin for an empty bottle on your way in—maybe you won't have to buy one at all!

The bottle is placed upside down in the feeder. The wide mouth provides an adequate size opening for the seed to flow out. It is not necessary to remove the bottle for filling. The bottom of the inverted bottle is cut off level with the top surface of the Top piece. The bottle is filled by tilting the hinged Head/Lid assembly back.

The cardinal's head is called out as being cut from two pieces of ¾" (19mm) stock and then face glued together. As an alternative, you could simply cut it from one piece of 1½" (38mm) thick stock. Many woodworkers feel it is easier to cut ¾" (19mm) stock than 1½" (38mm) thick stock.

Notice that the Lid is 5⅜" (137mm) wide while the Top piece is 5½" (140mm) wide. This is to provide clearance so the hinged Top will swing open without scraping on the inside tops of the Wings.

A piece of window screen is stapled to the bottom of the project to hold the seed. Although not illustrated on the drawing, you may wish to rout a ⅛" (3mm) deep x ⅜" (10mm) wide rabbet around the inside of the bottom of the frame. By doing this, your window screen will be inset slightly, which makes for a nicer finished appearance.

Begin by cutting each of the parts as described below. Then assemble the project according to the Final Assembly instructions and as shown in the Assembly Drawing.

LID: Layout and cut to size from ¾" (19mm) stock.

TOP: Layout and cut to size from ¾" (19mm) stock. Cut out the 3¼" (83mm) diameter hole.

BOTTOM A: Layout and cut to size from ¾" (19mm) stock. Cut the ¾" x 2" (19 x 51mm) notch. (Two pieces required.)

BOTTOM B: Layout and cut to size from ¾" (19mm) stock. Drill the 1½" (38mm) diameter hole through.

BOTTOM C, BOTTOM D: Layout and cut to size from ¾" (19mm) stock. (Two pieces required)

HEAD: Transfer the pattern onto ¾" (19mm) stock and cut out. Drill the ¹⁷⁄₆₄" (6.5mm) diameter hole through for the Plastic Eyes. (Two pieces required.)

WING: Transfer the pattern onto ¾" (19mm) stock and cut out. (Two pieces required.)

TAIL: Cut the 30° and 60° chamfers on a piece of ¾" (19mm) stock large enough to accept the pattern. After cutting the chamfers, transfer the pattern onto the stock and cut to final shape.

SANDING: Finish sand all parts.

FINAL ASSEMBLY:

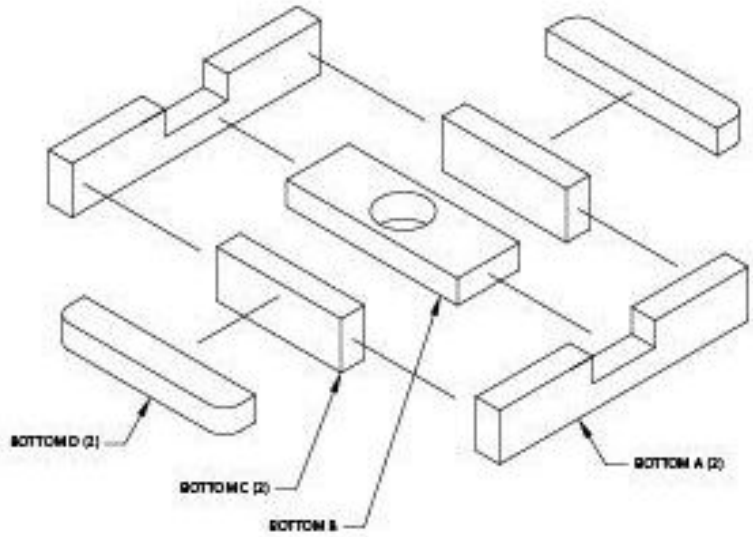
STEP 1: Attach the Bottom A pieces to the Bottom B and Bottom C pieces. Attach the Bottom D pieces to the ends. Optional: Rout a ⅛" (3mm) deep x ⅜" (10mm) wide rabbet around the inside of the bottom of the assembly to inset the window screen.

STEP 2: Attach the Wing pieces to the Top piece and the Bottom Assembly where shown on the drawing of the Wing piece. Attach the Tail. Face-glue the two Head pieces together and attach to the Lid. Attach the Lid to the Top with the Hinges. Fit the Window Screen, but do not install the Screen or the Plastic Eyes until after final finishing.

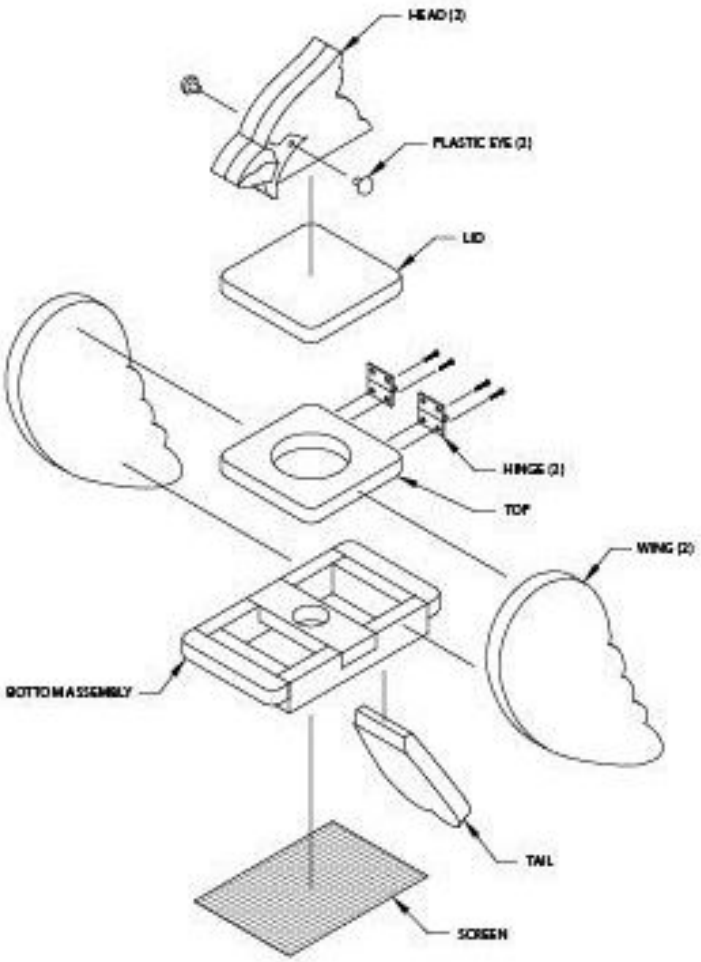
STEP 3: This project is hung by a Screw Eye on each wing. To locate where to drill the pilot holes for these Screw Eyes, hold the project with the tip of one finger pressed against each wing. Lift the project and move your fingers toward the front or toward the back until you find the balance point. Drill pilot holes and install Screw Eyes. With pliers, open an end link of a length of Chain and slip it onto one Screw Eye. Close the loop to secure the chain in place. Repeat on other side. Remove Screw Eyes and Chain for painting.

Slip the one-liter Bottle in place. Mark a line around the Bottle, and cut off the bottom portion flush with the top surface of the Top piece.

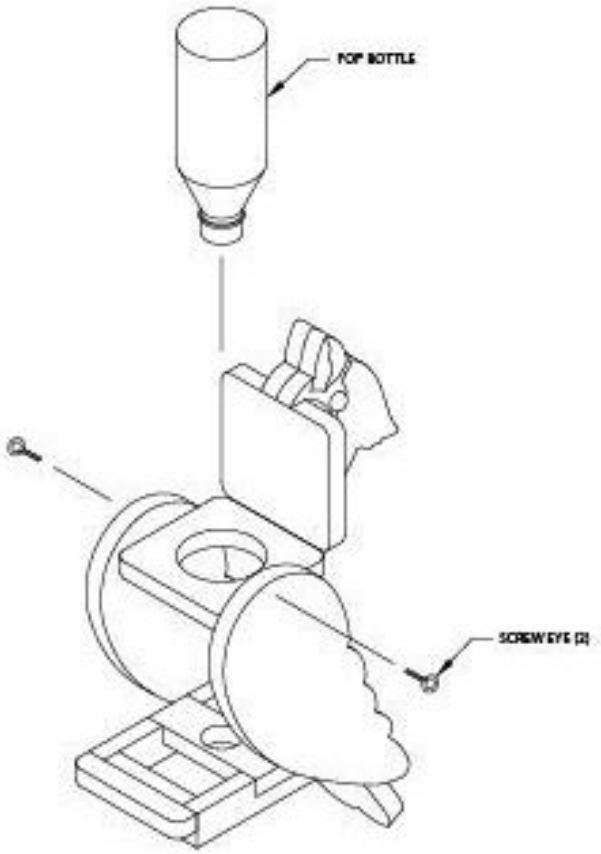
FINISHING: Prime the project and paint it with gloss or semi-gloss red acrylic latex. Use a black permanent paint marker to add the detail lines. Install the black plastic eyes. Staple the window screen to the bottom. Reinstall the Screw Eyes and Chains. Hang the project from a tree branch or other suitable location with the two lengths of Chain.



STEP #1



STEP #2



STEP #3

BILL OF MATERIALS

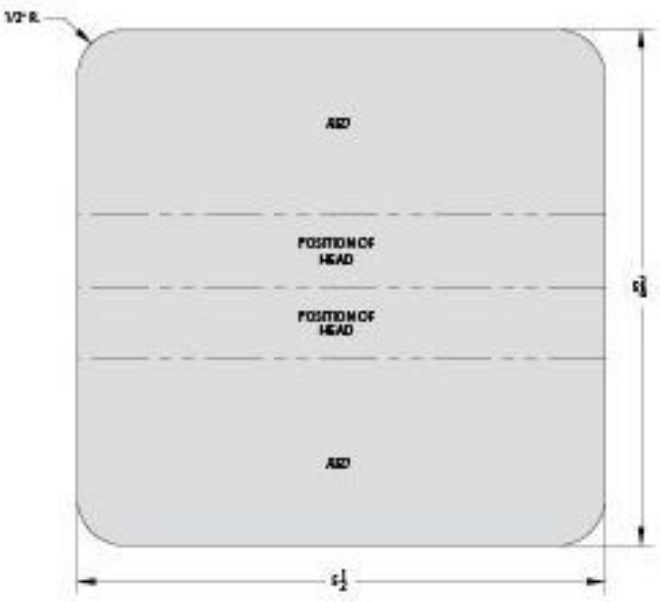
QTY.	PART	SIZE OF MATERIAL
1	Lid	¾" x 5½" x 5½" (19 x 137 x 140mm)
1	Top	¾" x 5½" x 5½" (19 x 140 x 140mm)
2	Bottom A	¾" x 1½" x 8" (19 x 38 x 203mm)
1	Bottom B	¾" x 2" x 5½" (19 x 51 x 140mm)
2	Bottom C	¾" x 1½" x 4" (19 x 38 x 102mm)
2	Bottom D	¾" x 1" x 5½" (19 x 25 x 140mm)
2	Head	¾" x 5½" x 7¾" (19 x 140 x 197mm)
2	Wing	¾" x 9½" x 12" (19 x 241 x 305mm)
1	Tail	¾" x 4¼" x 6⅞" (19 x 108 x 175mm)
1	Wire Screen	4¾" x 7¼" (19 x 184mm)
1 pair	Hinge	1½" (38mm)
*2	Black Plastic Eye	¾" (19mm) (#86530)
*1	Chain & Screw Eye Kit (#30137)	

PAINT

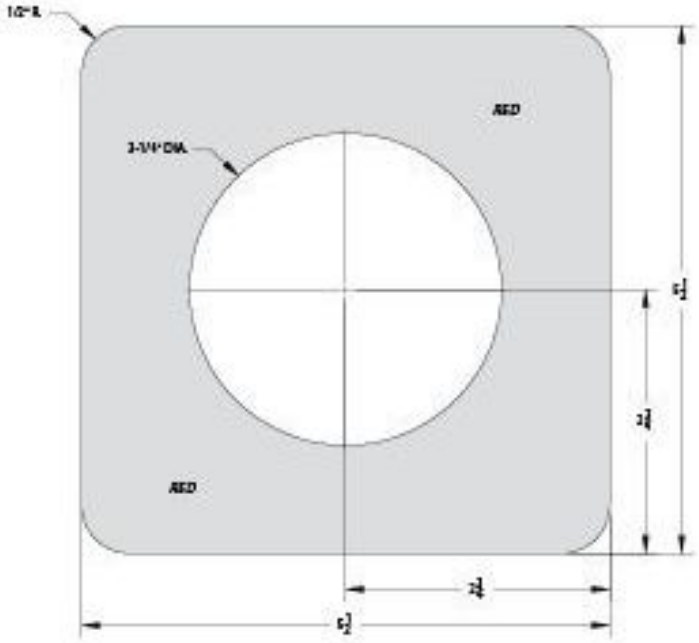
Exterior Acrylic Latex Primer and Gloss or Semi-Gloss Exterior Acrylic Latex paint is recommended.

QTY.	GENERIC COLOR
1	Black, Red

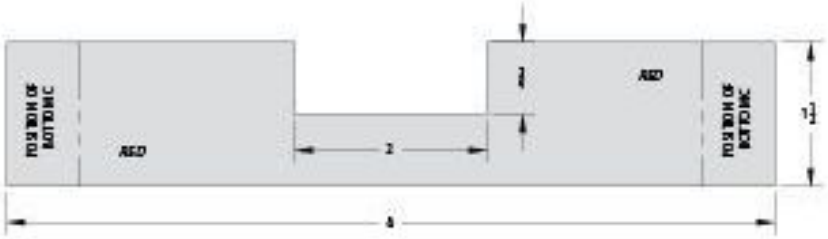
CUTTING DIAGRAM



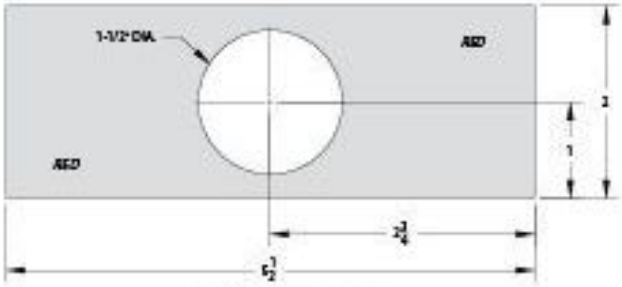
LID
½" X 5⅞" X 5½"



TOP
¾" X 5½" X 5½"



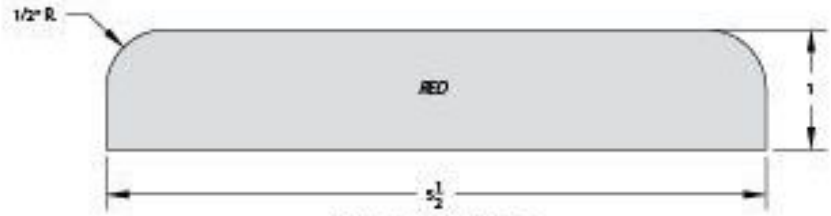
BOTTOM A
¾" X 1½" X 8" (2 REQ'D)



BOTTOM B
¾" X 2" X 5½"

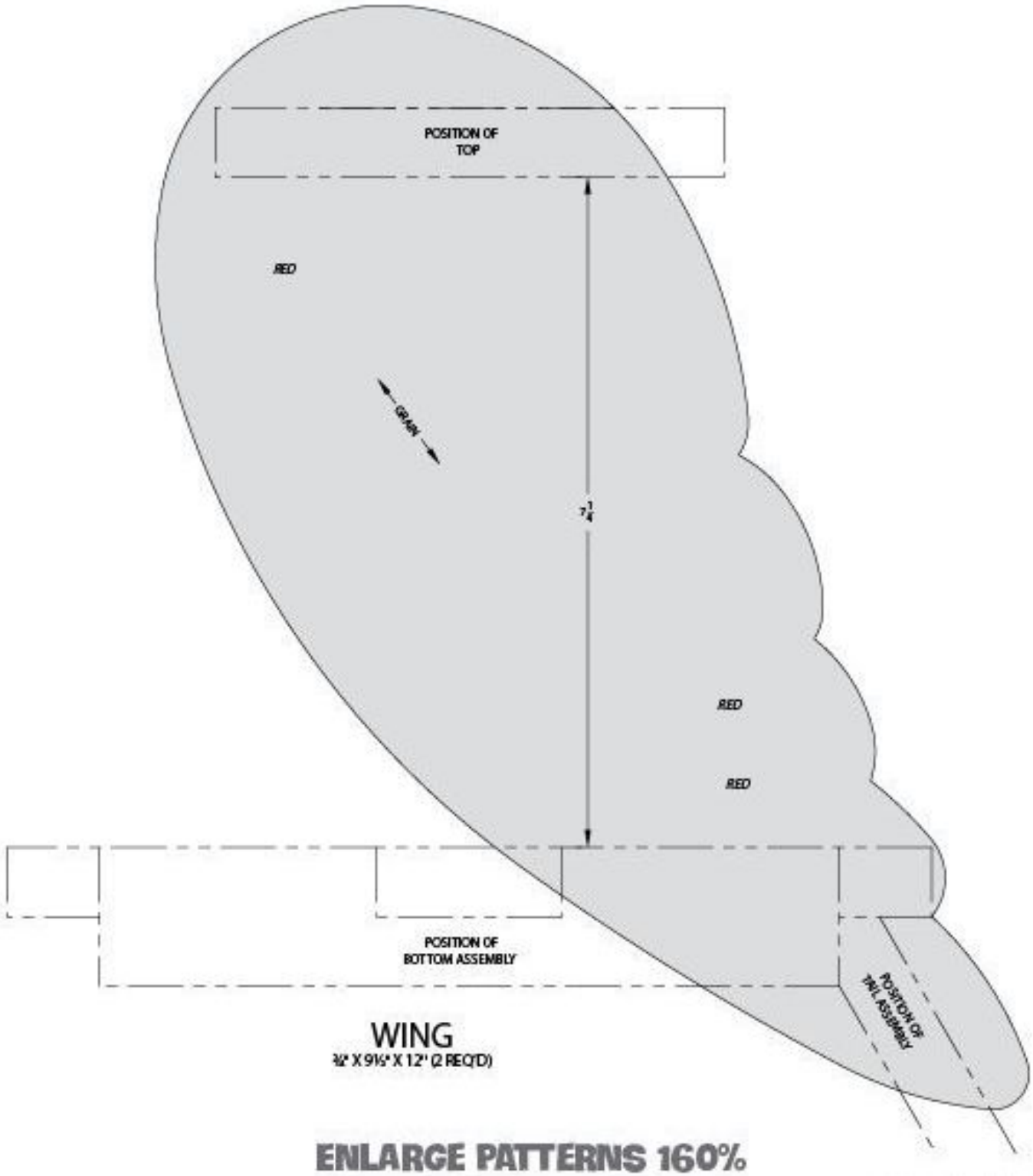
BOTTOM C
¾" X 1½" X 4" (2 REQ'D)

ENLARGE PATTERNS 200%



BOTTOM D

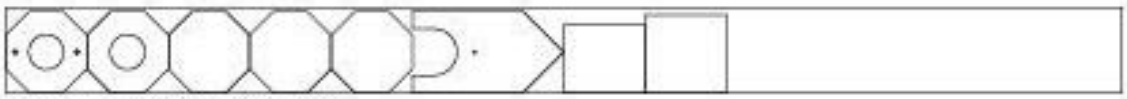
¾" X 1" X 5½" (2 REQ'D)



WING

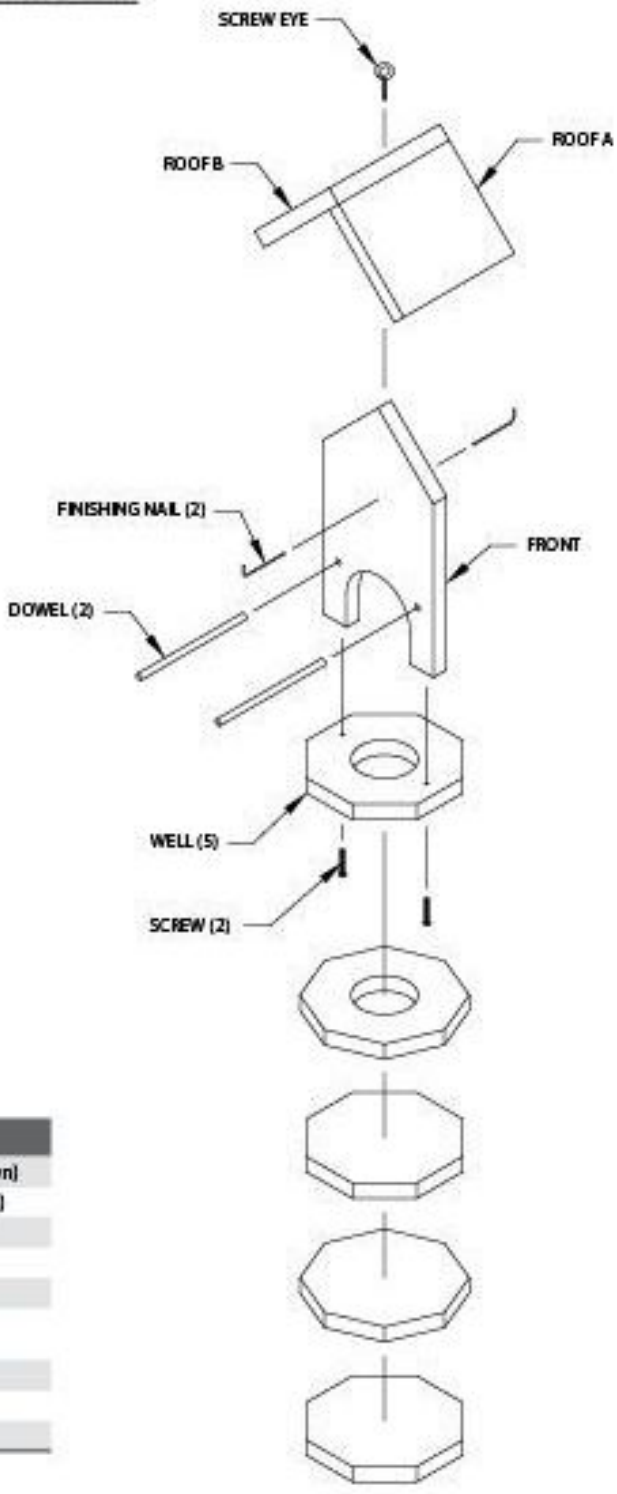
¾" X 9½" X 12" (2 REQ'D)

ENLARGE PATTERNS 160%



5/8" X 5-1/2" X 6' CEDAR FENCE BOARD

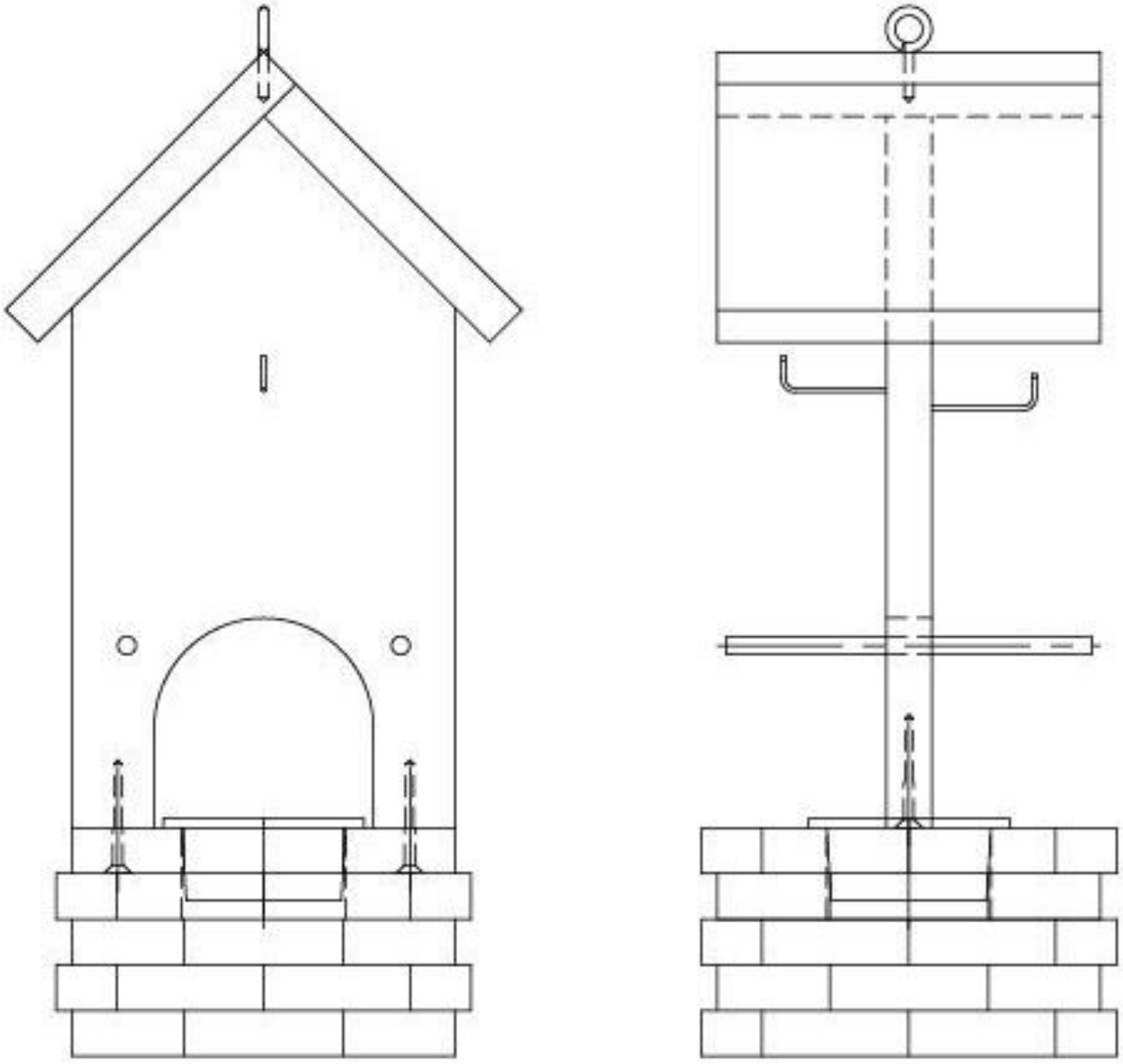
CUTTING DIAGRAM



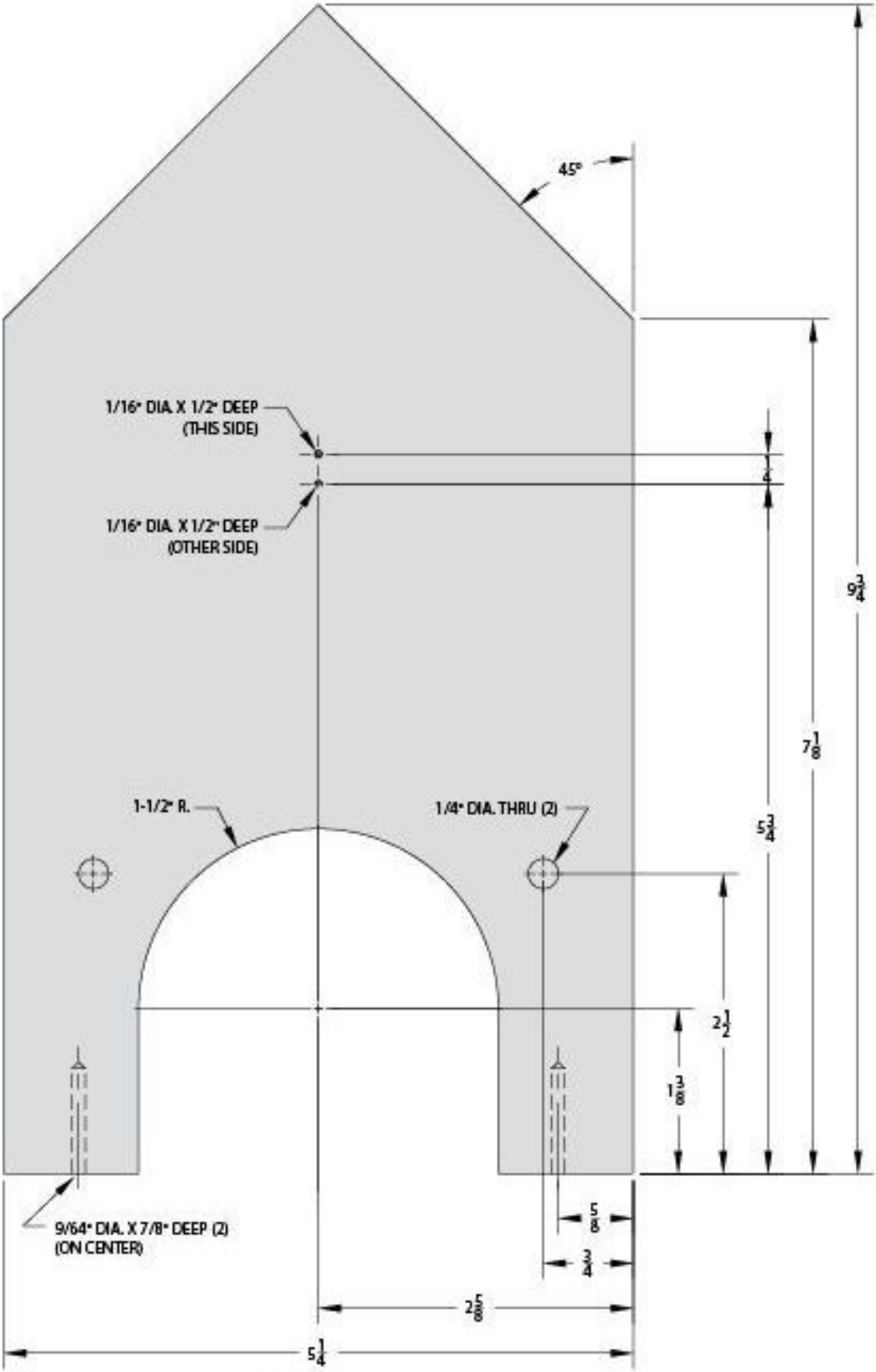
ASSEMBLY DRAWING

BILL OF MATERIALS

QTY.	PART	SIZE OF MATERIAL
1	Roof A	⅝" x 4⅜" x 5¼" (16 x 111 x 133mm) (not shown)
1	Roof B	⅝" x 5" x 5¼" (16 x 127 x 133mm) (not shown)
1	Front	⅝" x 5¼" x 9¾" (16 x 133 x 248mm)
5	Well	⅝" x 5¼" x 5¼" (16 x 133 x 133mm)
2	Dowel	¼" (6mm) Dia. x 5"
2	Finishing or Casing Nail	8 penny
2	Wood Screw	1½" (38mm) x #8
*1	2-¼" Plastic Plug	(#1279)
1	Screw Eye	1⅝" (40mm)



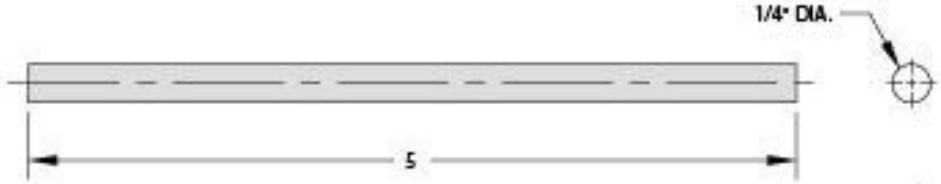
SIDE VIEW



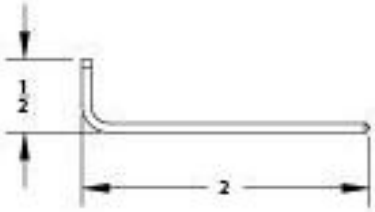
FRONT

¾" X 5¼" X 9¾"

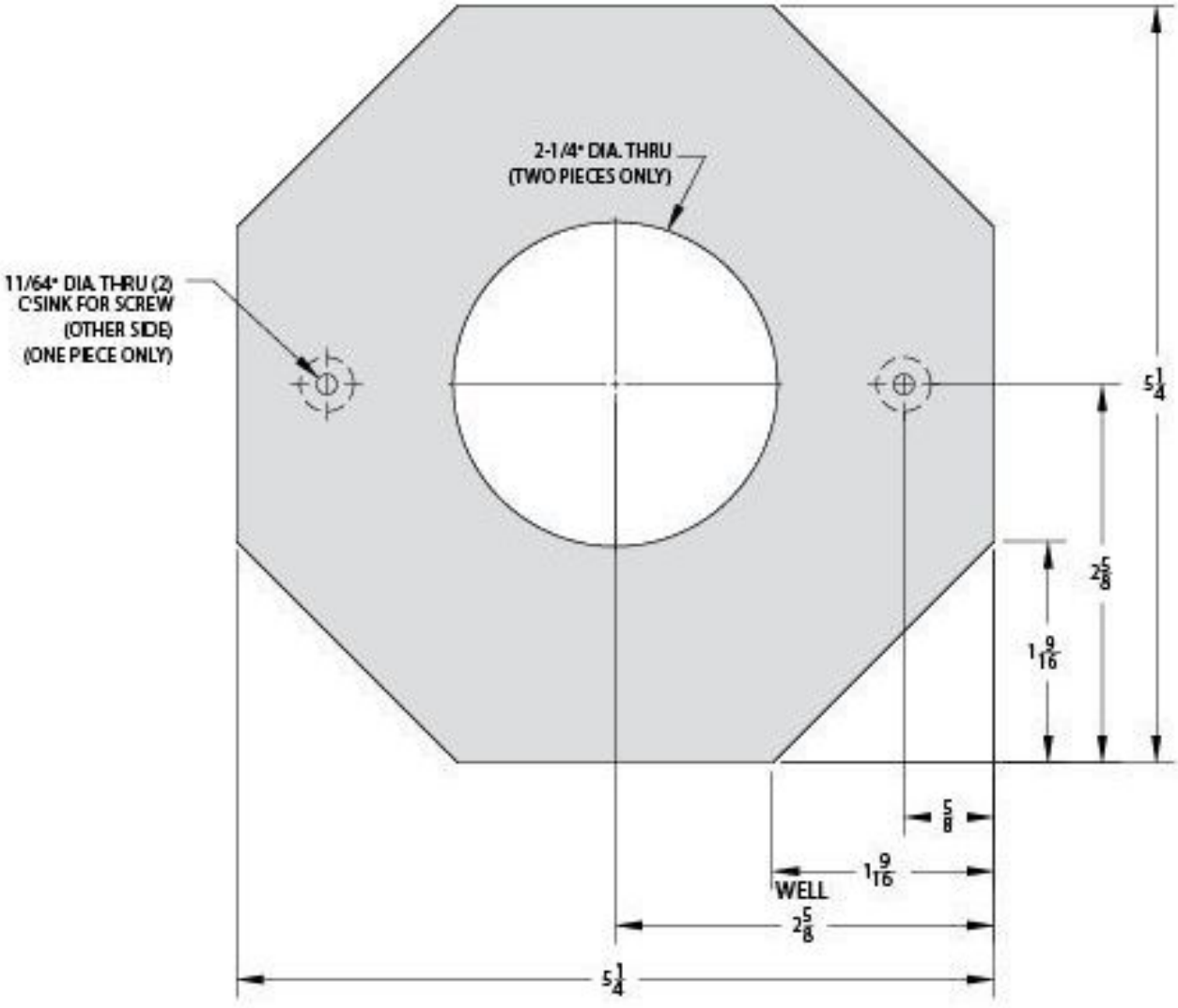
ENLARGE PATTERN 125%



DOWEL
¼" DIA. X 5" (2 REQ'D)



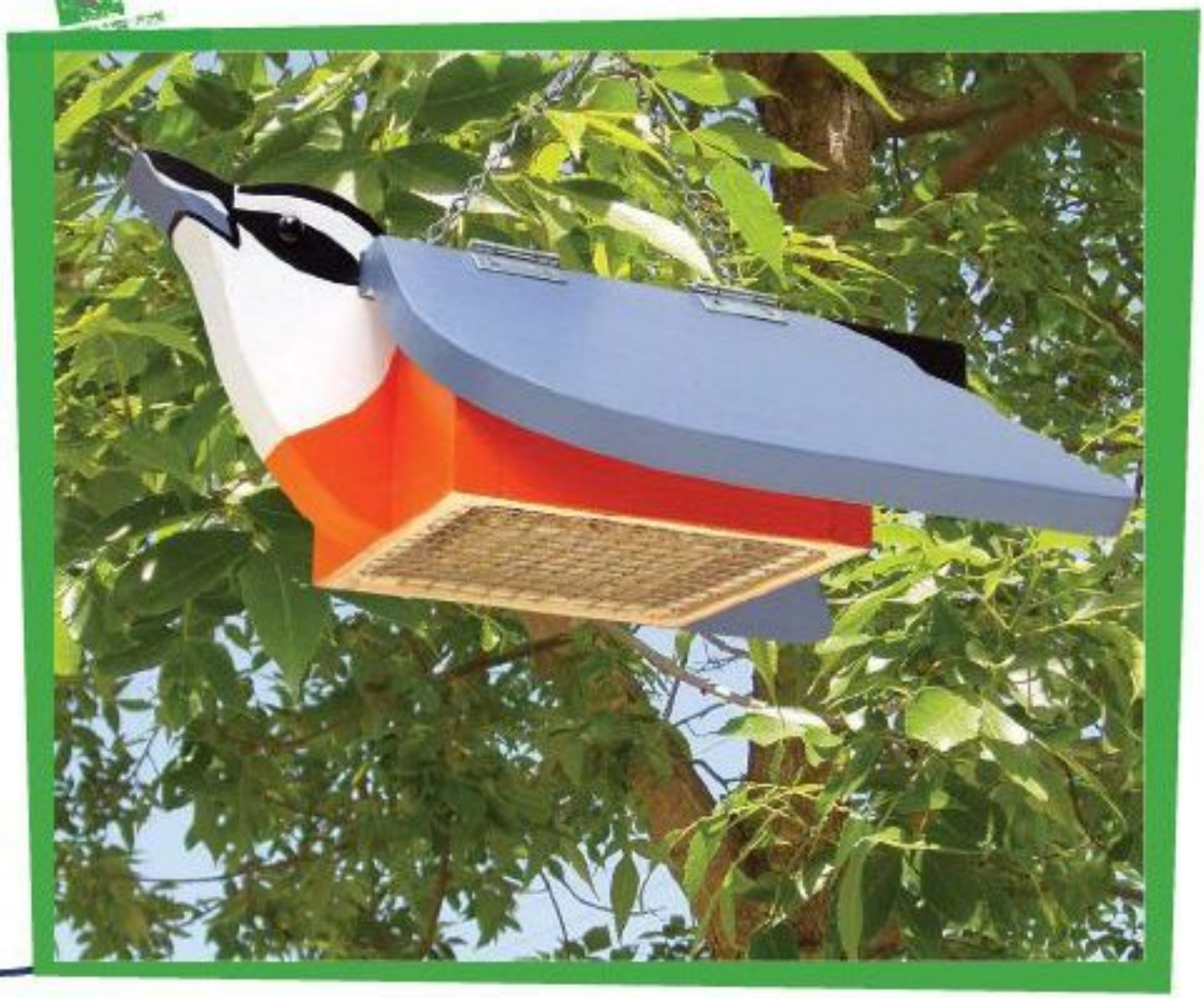
FINISHING NAIL
8d X 2 ½" (2 REQ'D)



WELL
5/4" X 5 ¼" X 5 ¼" (5 REQ'D)

ENLARGE PATTERNS 125%

UNDERSIDE SUET BIRD FEEDER



THERE ARE LOTS OF PROJECTS IN THIS BOOK FOR SEED EATING BIRDS; HERE'S ONE FOR A SUET FEEDER. Birds that prefer insects generally show up at a suet feeder, which may lead to fewer annoying bugs in the vicinity.

Suet is animal fat, usually from beef or mutton. It is inexpensive, and some butchers may even give it away. You can also purchase pre-packaged blocks from stores selling bird food. This feeder has a 5½" x 5½" (140 x 140mm) cavity designed to accept these suet blocks.

Suet is high in calories and provides birds with an important source of energy year around. Don't hang this feeder in direct sun, especially in the summer, as heat can spoil the suet.

With this feeder, the suet is accessed from the underside. This poses no problem for woodpeckers, nuthatches, and chickadees, but will discourage less acrobatic birds such as crows and starlings.

PLAN OF PROCEDURE

This project is constructed from ¾" (19mm) lumber. A cutting diagram shows how much lumber you need. The Head is made by cutting two pieces of ¾" (19mm) lumber to shape and then face-gluing them together to make a 1½" (38mm) total thickness. As an alternative, you could just cut one piece from 1½" (38mm) thick lumber.

Assembly can be done with water-resistant glue and nails or screws.

To hang the feeder with chain, add two screw eyes in the position shown on the drawing of the Top piece. Another way to hang the feeders is to drill two holes in the Top piece and slip a rope through them. If using this method, be sure to drill the holes so they will go inside the cavity and you can tie knots in the ends.

Purchase hardware screen with ½" (13mm) weave, available in most hardware stores.

Begin by cutting each of the parts as described below. Then assemble the project according to the Final Assembly instructions and as shown in the Assembly Drawing.

BIRD HEAD: Transfer the pattern onto ¾" (19mm) stock and cut out. Drill the 13/64" (5mm) diameter hole through. (Two pieces required.)

BIRD TOP: Layout and cut to size from ¾" (19mm) stock. Cut the 22 1/2° bevels. If using screw eyes to hang the project, drill screw eye pilot holes where shown. Transfer the pattern and cut out.

BIRD LID: Layout and cut to size from ¾" (19mm) stock. Cut the 22 1/2° bevel. Transfer the pattern and cut out. (One right-hand and one left-hand piece required.)

SIDE, FRONT/BACK: Layout and cut to size from ¾" (19mm) stock. (Two pieces each required.)

WIRE SCREEN: Use a tin snips to cut a 6¼" x 6¼" (159 x 159mm) piece of ½" (13mm) square Wire Screen (Hardware Cloth).

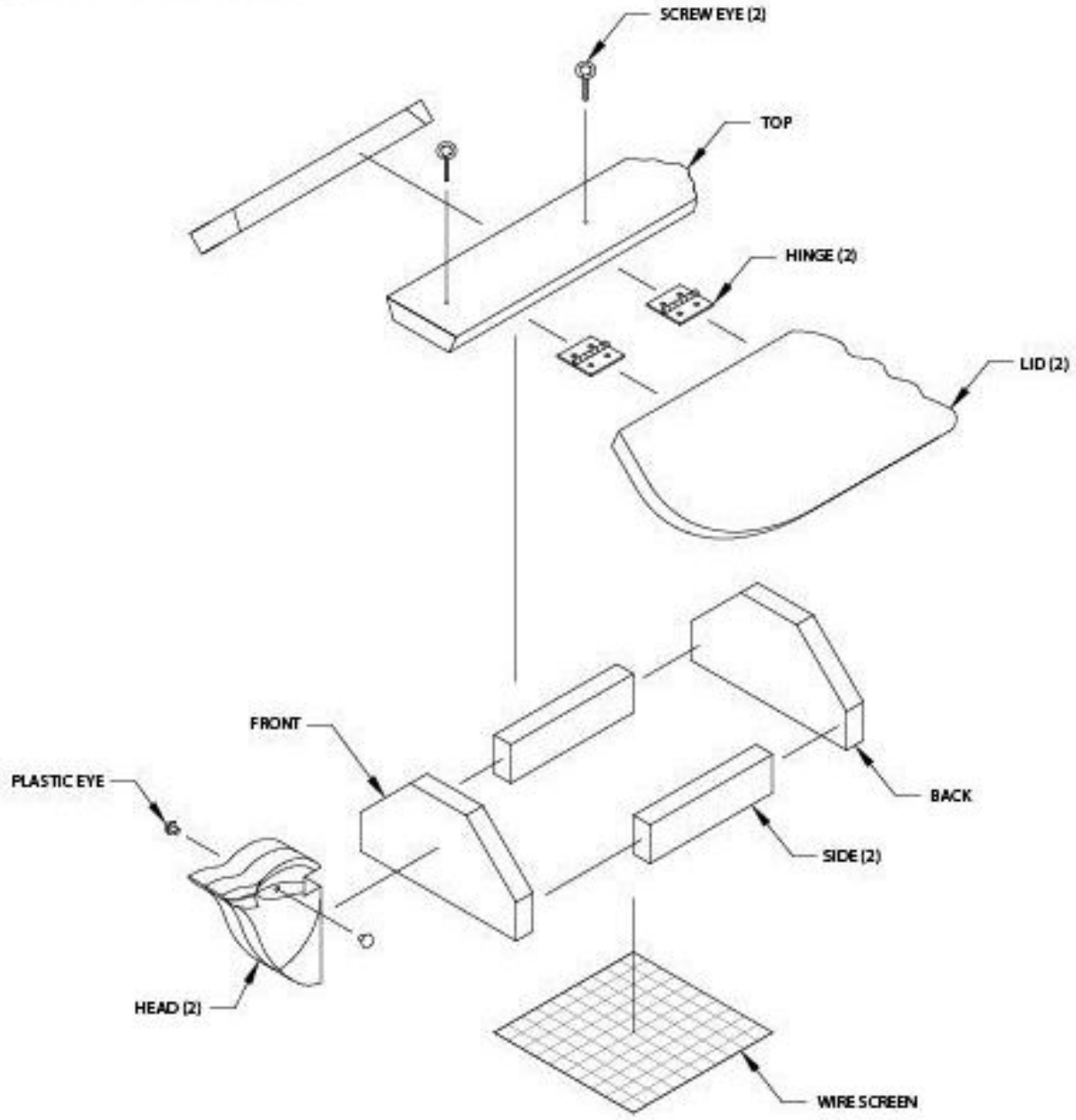
SANDING: Finish sand all parts.

FINAL ASSEMBLY:

Attach the Front and Back pieces to the Side pieces where shown. Attach the Top to the Front/Back assembly where shown. Rout a ⅜" (10mm) wide x ⅛" (3mm) deep rabbet around the inside of the bottom of the assembly for the Hardware Screen. Face-glue the Bird Head pieces together and attach to the Front where shown. Attach one Lid to the Top with the Hinges. The remaining Lid can be permanently fastened in place.

FINISHING: Now is the best time to paint the project. Paint colors are indicated on all parts. I prefer Delta paints for the colors called out in the Bill of Materials. After painting, top coat with exterior clear varnish. I prefer Delta for the varnish too, but you should select the brand of paint and varnish that suits you.

After finishing, insert the Plastic Eyes in the 13/64" (5mm) holes in the Bird Head. Fasten the ½" (13mm) Grid Wire Screen to the bottom of the project with staples. Attach the Hinges and Screw Eyes. Insert the Chain or Rope to hang the completed project.



ASSEMBLY DRAWING

BILL OF MATERIALS

BIRD SHAPED SUET FEEDER

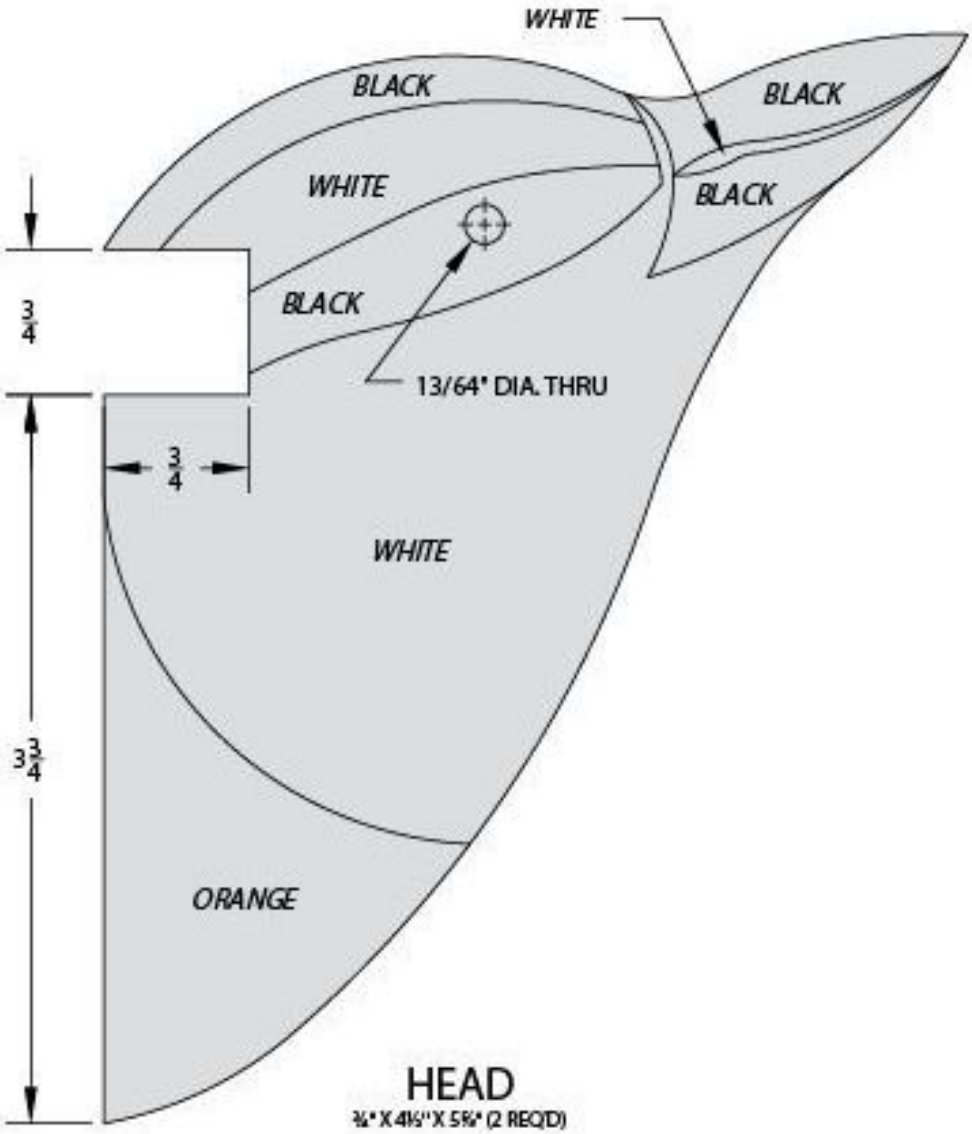
QTY.	PART	SIZE OF MATERIAL
2	Bird Head	¾" x 4½" x 5⅝" (19 x 114 x 143mm)
1	Bird Top	¾" x 3⅞" x 11¾" (19 x 79 x 298mm)
2	Bird Lid	¾" x 5¼" x 11 ⅝" (19 x 133 x 296mm)
2	*Plastic Eye	7/16" (11mm) Dia. (#8627)
2	Side	¾" x 1½" x 5½" (19 x 38 x 140mm) (not shown)
2	Front/Back	¾" x 3¾" x 7" (19 x 95 x 178mm)
1	Wire Screen	6¼" x 6¼" (159 x 159mm) (½" (13mm) grid)
2	Screw Eye	1⅝" (40mm)
1 pair	Hinge w/ Screw	1½" (38mm)

PAINT

Acrylic paint is recommended

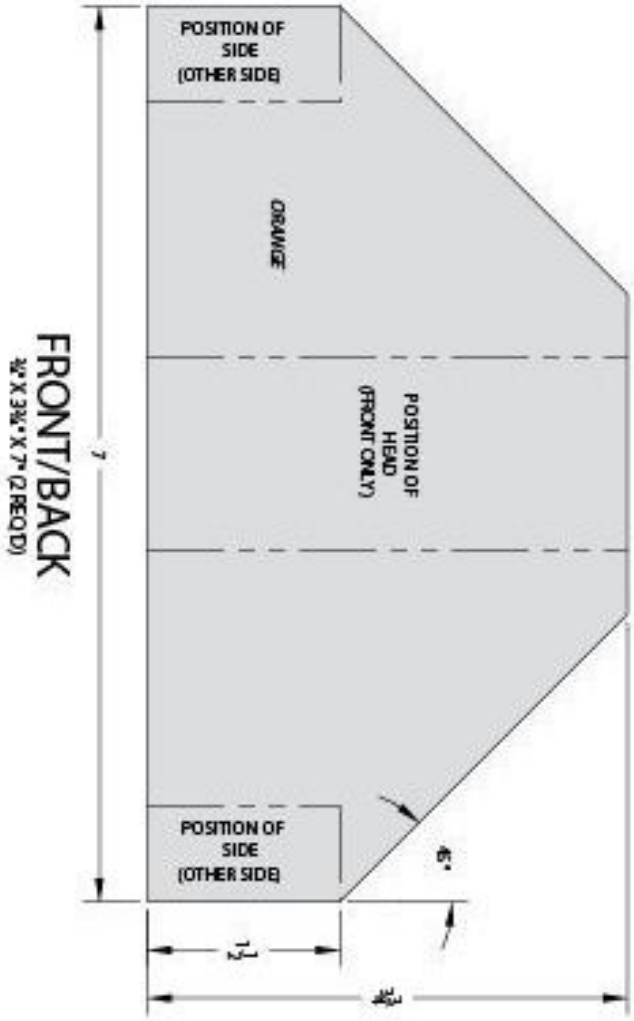
QTY.	GENERIC COLOR	PART NUMBER
1	Black	2 oz. (Delta #02506)
1	White	2 oz. (Delta #02505)
1	Blue	2 oz. (Delta #02133)
1	Orange	2 oz. (Delta #02042)
1	Exterior Clear Satin Varnish	8 oz. (Delta #07003)

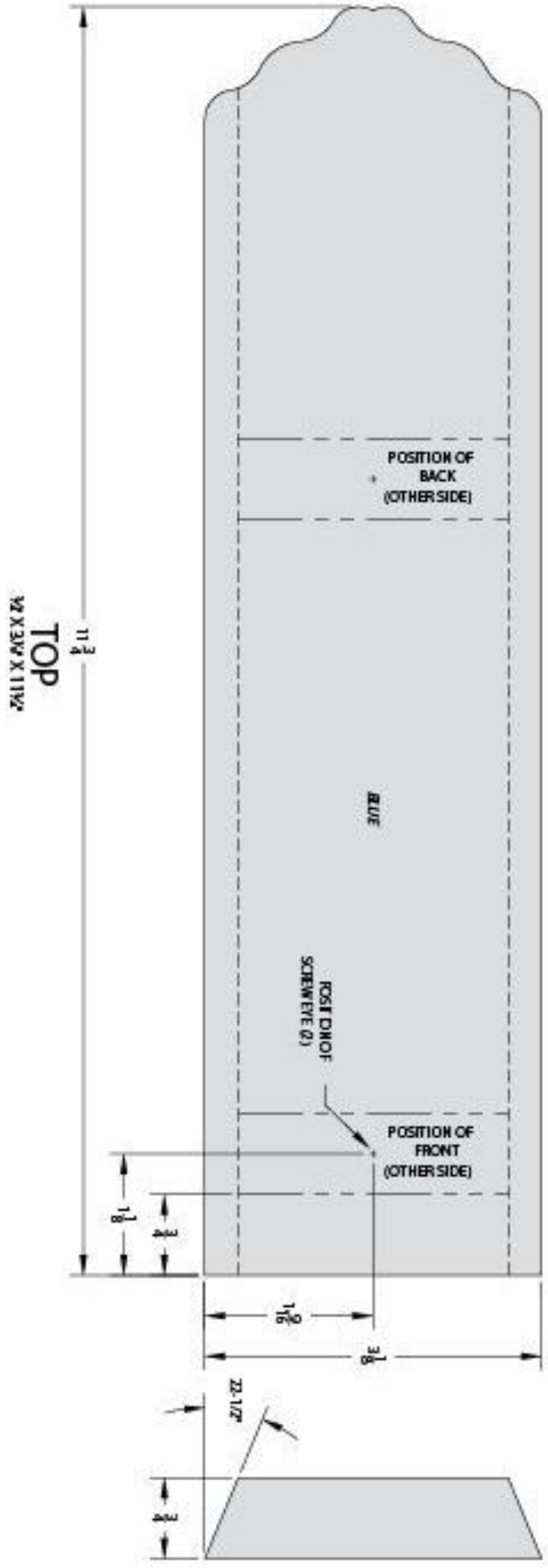
CUTTING DIAGRAM



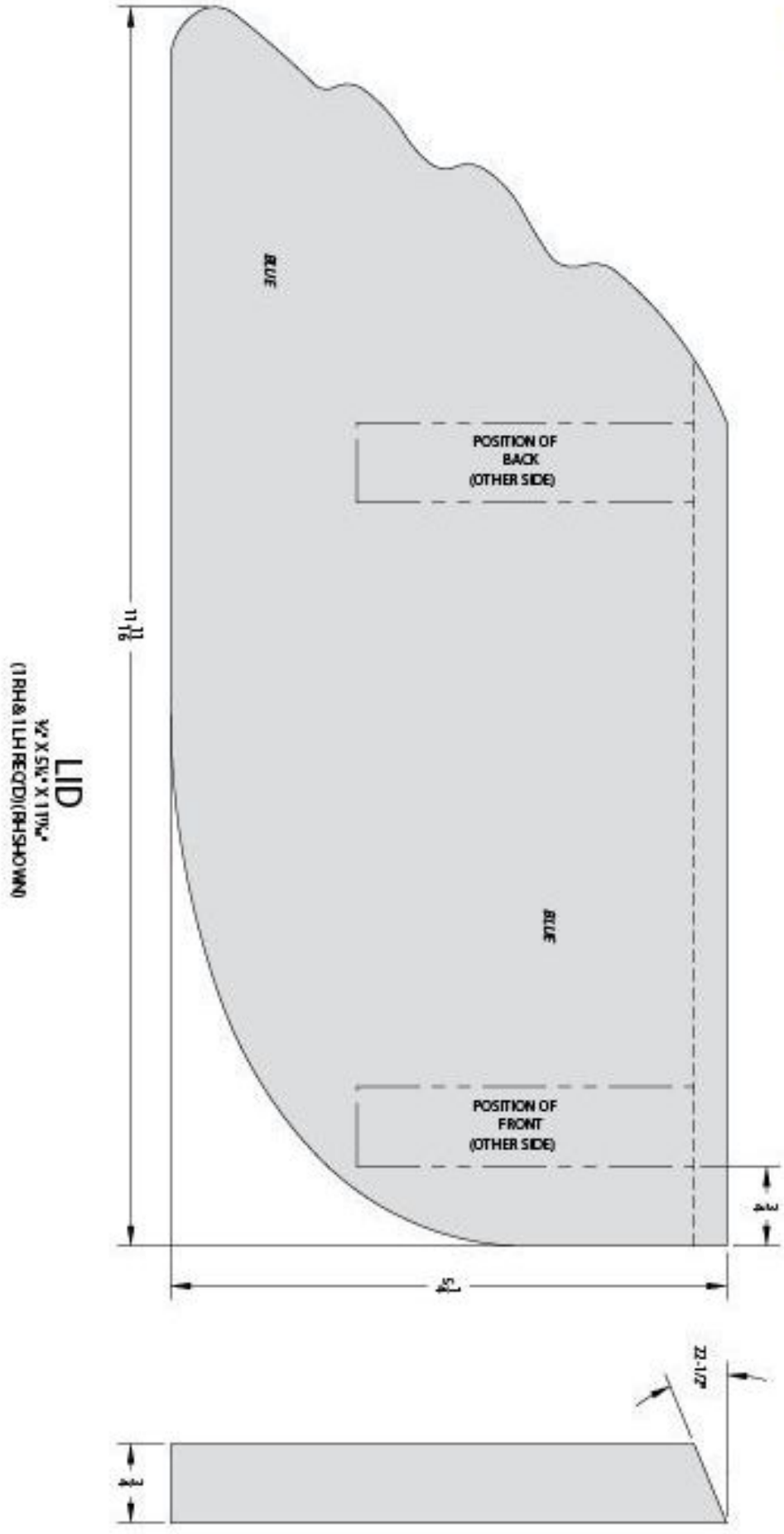
HEAD
¾" X 4½" X 5⅝" (2 REQ'D)

PATTERN AT 100%





ENLARGE PATTERNS 150%



ENLARGE PATTERN 150%

PLANTER BIRD FEEDER

BIRDS ARE MOST COMFORTABLE IN NATURAL HABITATS WHERE THEY FEEL SAFE AND PROTECTED. This feeder is designed to imitate their natural environment by growing flowers or other plants on top.

The sides of the feeder are made in the shape of a giant tree trunk with a bushy tree crown. The top has a recessed "growing cavity" that can be filled with soil so live plants can be grown on top. Besides offering a more natural environment for birds, this design helps keep birdseed cool and well shaded.

It is an open style feeder, so it's easy to fill. Just reach in the side and place the seed directly on the feed tray.

The feeder is designed to be mounted on a post, preferably a steel post with a predator guard. The finished project measures 14" (356mm) wide x 13½" (343mm) high.

PLAN OF PROCEDURE

This project is constructed from ¾" (19mm) stock. It is pictured in pine. Cedar or redwood could be substituted.

After assembly, caulk the seams around the inside of the planter. We painted the inside with exterior acrylic latex enamel. For further protection from moisture, you may wish to line it with a heavy gauge polyethylene plastic.

Begin by cutting each of the parts as described below. Then assemble the project according to the Final Assembly instructions and as shown in the Assembly Drawings.

FEEDER SIDE, PLANTER SIDE: Layout and cut to size from ¾" (19mm) stock according to the dimensions given in the Bill of Materials. (Two pieces each required.)

FEEDER BOTTOM: Layout and cut to size from ¾" (19mm) stock according to the dimensions given in the Bill of Materials.

PLANTER BOTTOM: Layout and cut to size from ¾" (19mm) stock. Cut the 15° bevel. (Two pieces required.)

TREE TOP, TREE TRUNK: Transfer the patterns onto ¾" (19mm) stock and cut out. (Two pieces required.)

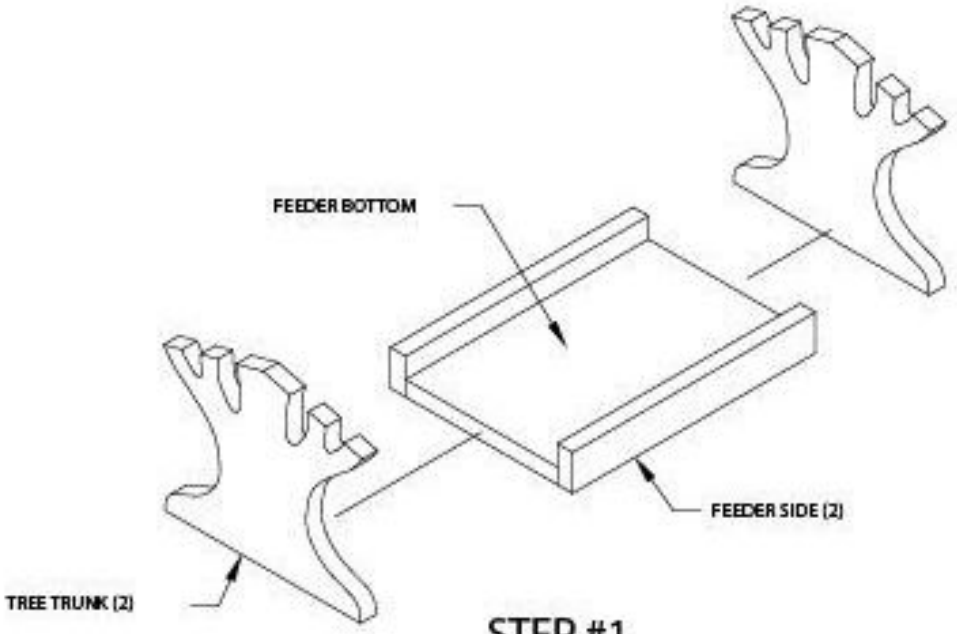
SANDING: Finish sand all parts.

FINAL ASSEMBLY:

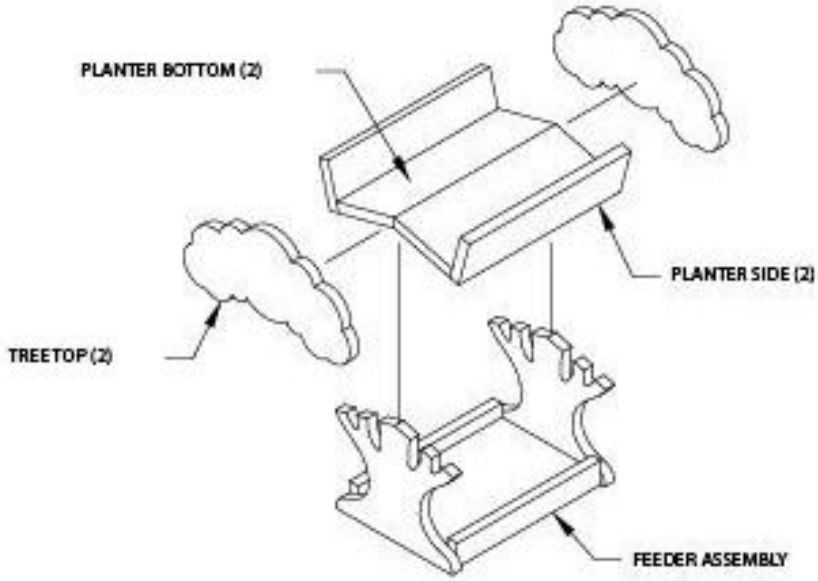
STEP 1: Attach the Feeder Side pieces to the Feeder Bottom. Attach the Tree Trunk pieces to the Feeder Assembly where shown.

STEP 2: Attach the Planter Side pieces to the Planter Bottom pieces. Attach the Planter Bottom/Planter Side Assembly together and attach to the Tree Trunk pieces. Attach the Tree Top pieces to the Planter Assembly where shown.

FINISHING: The Tree Trunk can be finished with a dark stain or with brown paint. It is best not to stain or paint the inside of the Feeder Assembly. The Tree Top, Planter Sides, and Planter Bottom pieces were painted green.



STEP #1



STEP #2

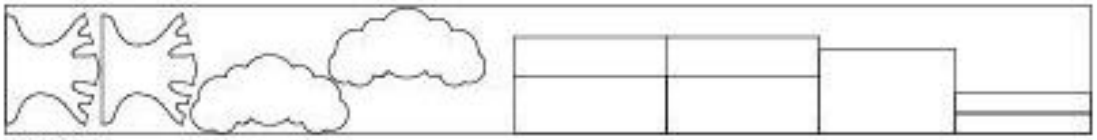
BILL OF MATERIALS

QTY.	PART	SIZE OF MATERIAL
2	Feeder Side	¾" x 1¾" x 12" (19 x 44 x 305mm) (not drawn)
1	Feeder Bottom	¾" x 7½" x 12" (19 x 191 x 305mm) (not drawn)
2	Planter Side	¾" x 3½" x 13½" (19 x 89 x 343mm) (not drawn)
2	Planter Bottom	¾" x 5" x 13½" (19 x 127 x 343mm)
2	Tree Top	¾" x 7" x 13⅞" (19 x 178 x 353mm)
2	Tree Trunk	¾" x 8⅜" x 9⅞" (19 x 213 x 251mm)

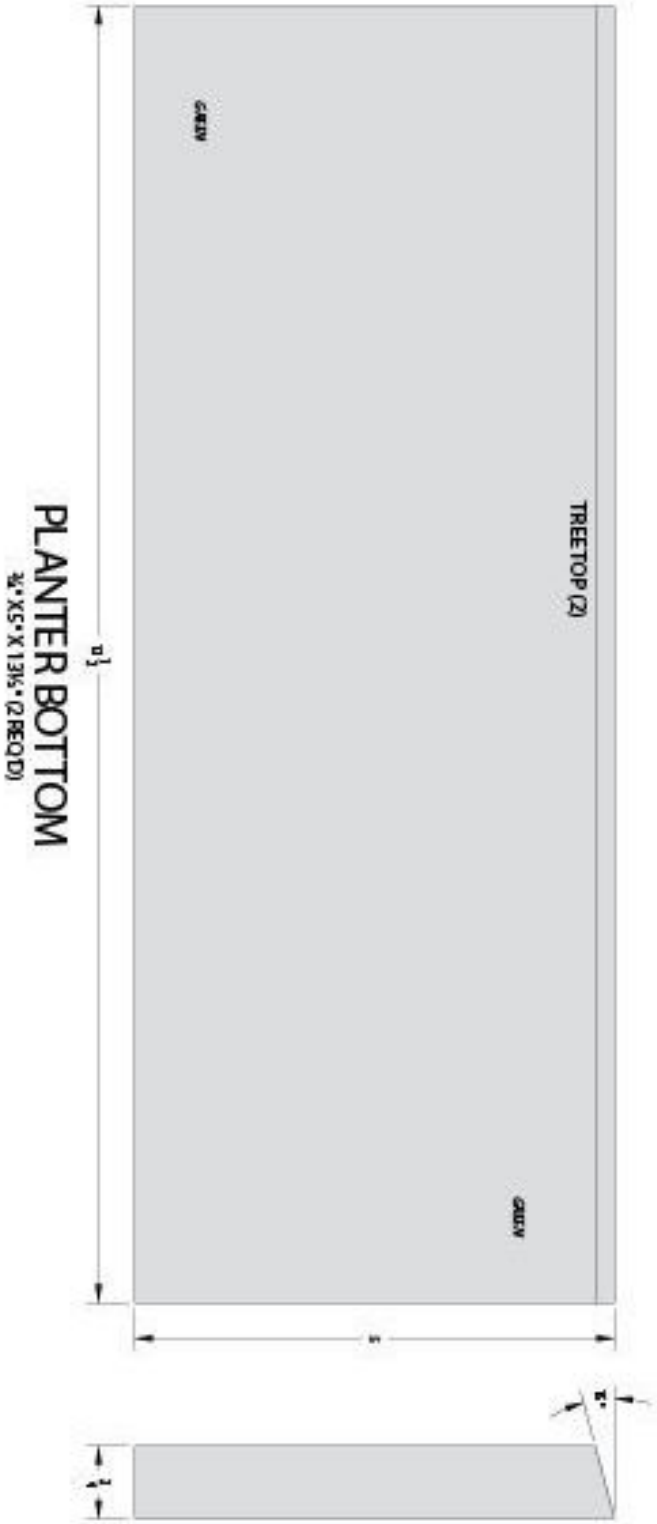
PAINT

Exterior Acrylic Latex Primer and Gloss or Semi-Gloss Exterior Acrylic Latex paint is recommended.

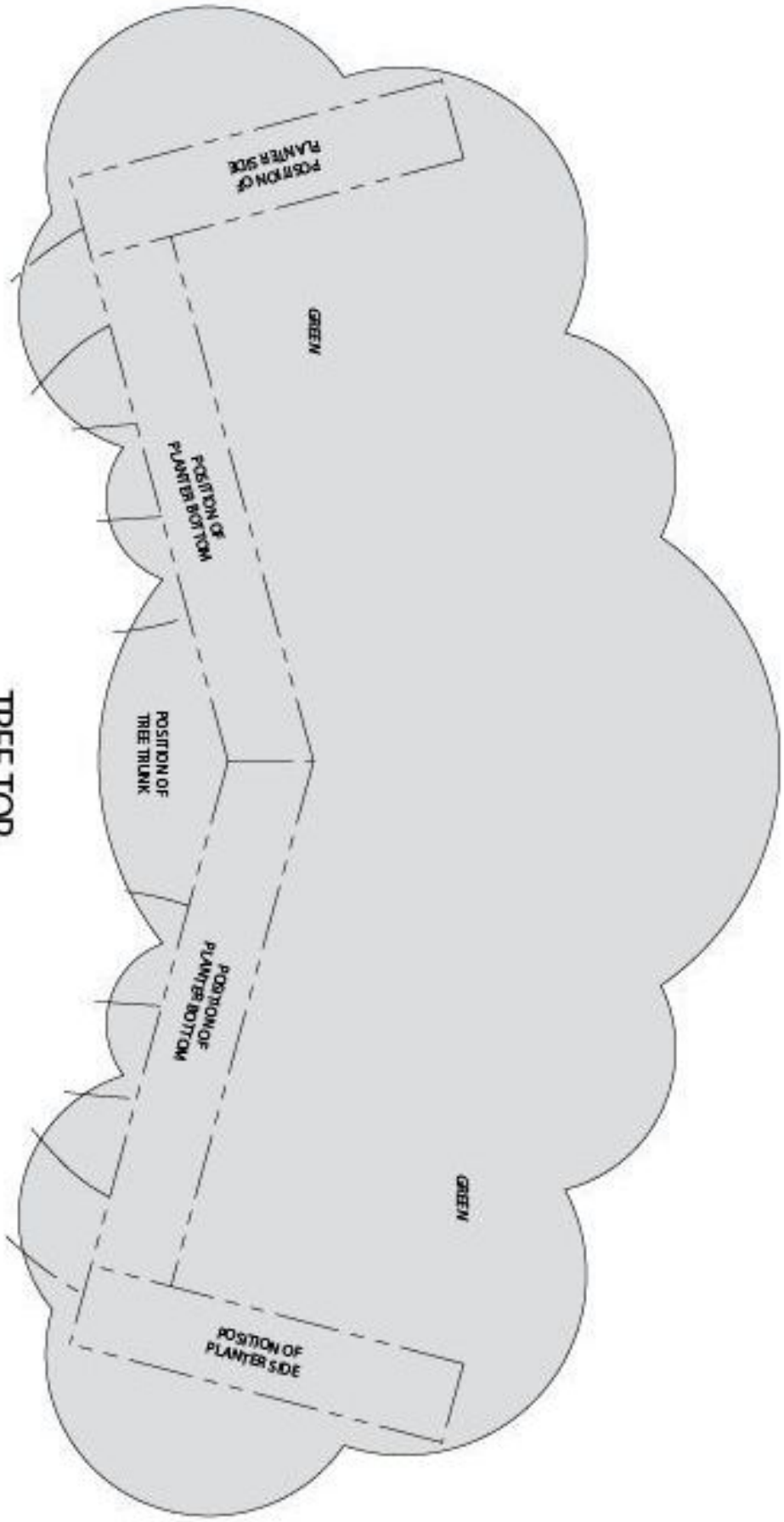
QTY.	GENERIC COLOR
1 ea.	Brown, Green



CUTTING DIAGRAM

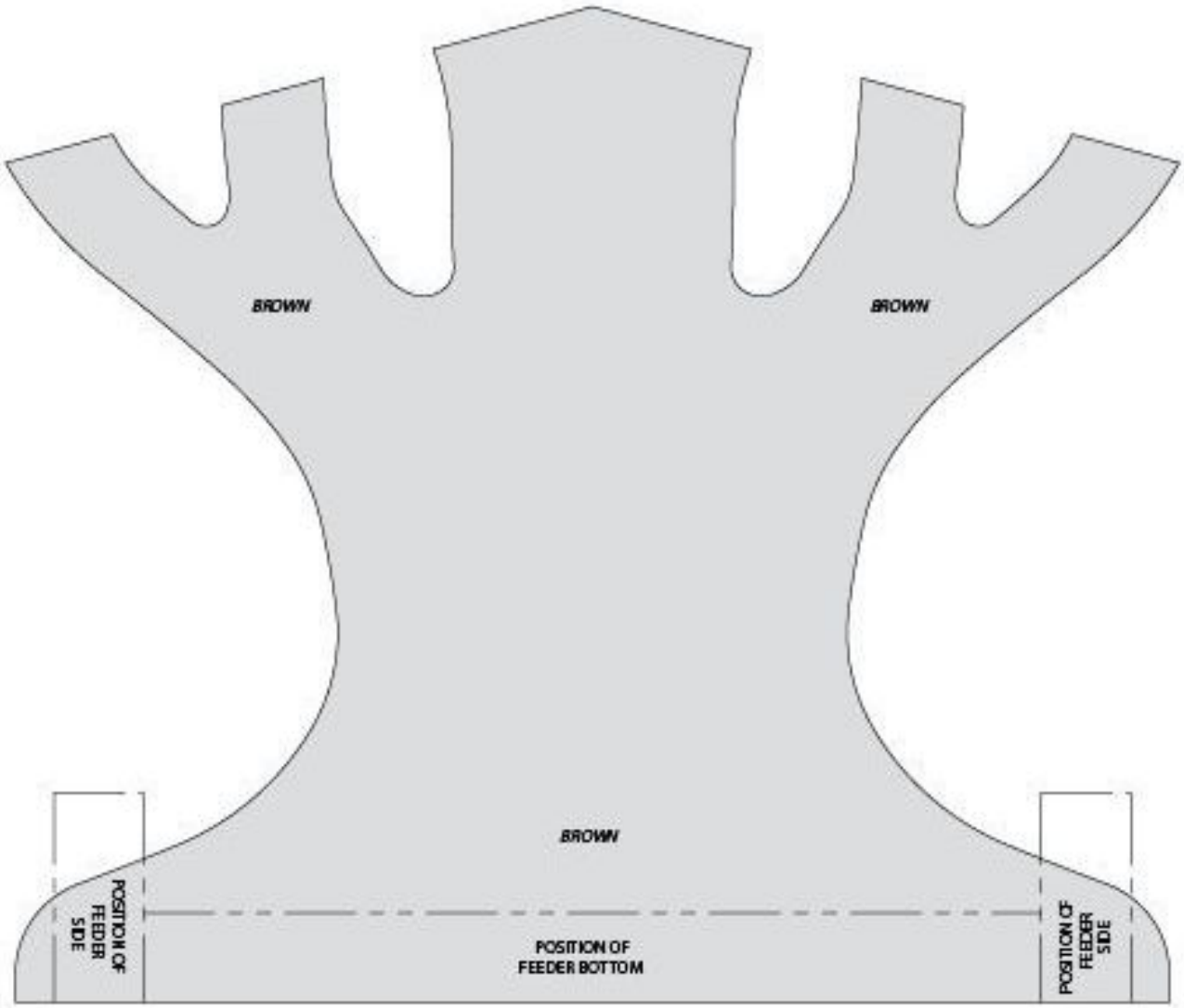


ENLARGE PATTERN 200%



TREE TOP
¾"X 7"X 13¾" (2 REQ'D)

ENLARGE PATTERN 150%



TREE TRUNK

½" X 8¾" X 9¼" (2 REQ'D)

ENLARGE PATTERN 150%

FOOTBALL HELMET BIRD FEEDER

SHOW LOYALTY TO YOUR FAVORITE FOOTBALL TEAM WITH THIS FOOTBALL HELMET BIRD FEEDER. Football is a tremendously popular sport and is strongly supported by an amazing number of fans. Nearly half of U.S. households with television watch the Super Bowl, which is broadcast in over 150 countries. People love to watch not only professional football but college and high school teams as well. Statistics show that since the 1990s, football has surpassed baseball as the most popular spectator sport in the United States.

The challenge to creating the design for this feeder was to use flat wood to make a round project that would be a workable feeder and easily recognizable as a football helmet. Simplicity is the key.

After assembly you can paint the helmet the colors of your favorite football team.

Mount the finished project on a vertical wood post or on a pipe with a floor flange. The finished project measures approximately 10½" (13mm) high. The seed tray measures 5¼" x 7½" (133 x 191mm).

PLAN OF PROCEDURE

The Faceguard Side pieces are cut from ½" (13mm) exterior plywood. The remaining parts are cut from ¾" (19mm) lumber. Assembly is done with water-resistant glue and nails (a brad gun is preferred over hand nailing).

This plan includes drawings for all pieces except those called out in the Bill of Materials as "not drawn." Those pieces are simple rectangular shaped parts so drawings are not needed or provided. Simply cut them to the size given in the Bill of Materials.

FACEGUARD SIDE: Transfer the pattern onto ½" (13mm) plywood and cut out. (Two pieces required.)

FACEGUARD FRONT: Layout and cut to size from ¾" (19mm) stock according to the dimensions given in the Bill of Materials. (Three pieces required.)

SIDE: Layout and cut to size from ¾" (19mm) stock according to the dimensions given in the Bill of Materials. (Two pieces required.)

FRONT, BOTTOM: Layout and cut to size from ¾" (19mm) stock according to the dimensions given in the Bill of Materials.

BACK: Layout and cut to size from ¾" (19mm) stock. Cut the 71/2° degree bevel.

TOP: Layout and cut to size from ¾" (19mm) stock. Transfer the curve pattern and cut out.

HELMET: Transfer the pattern onto ¾" (19mm) stock and cut out. Drill the 1 ¼" (32mm) diameter x ⅜" (10mm) deep hole. Rout the ¼" (6mm) and ½" (13mm) radius roundovers on the indicated edge. (One right-hand and one left-hand piece required.)

SANDING: Finish sand all parts.

The Helmet pieces are routed on opposite sides with a roundover bit to make a left hand and right hand piece.

Begin by cutting each of the parts as described below. Then assemble the project according to the Final Assembly Instructions and as shown in the Steps 1–3 Assembly Drawings.

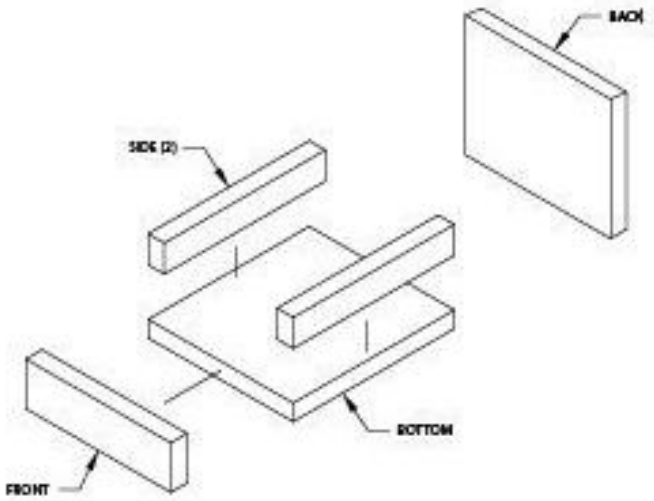
FINAL ASSEMBLY:

STEP 1: Attach the Front, Sides, and Back pieces to the Bottom piece. Drill several ¼" (6mm) drain holes on the Bottom piece.

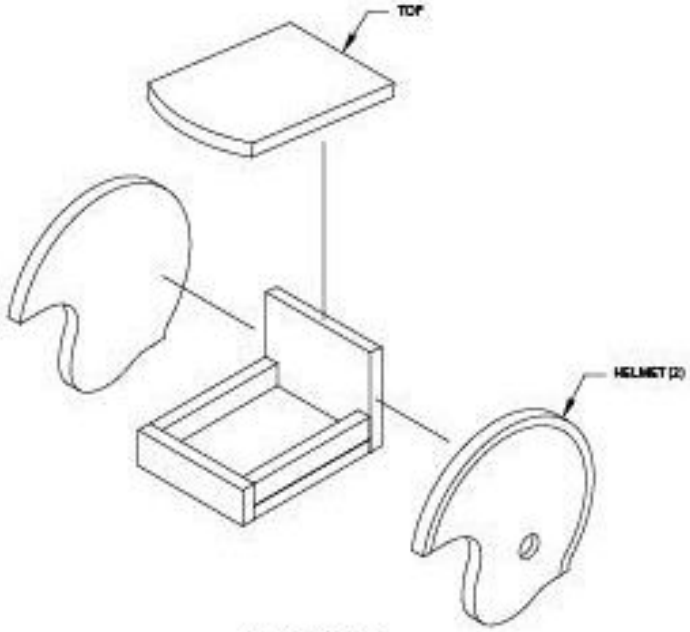
STEP 2: Attach the Top and Helmet pieces to the Bottom and Back pieces in the position shown on the drawing of the Helmet piece.

STEP 3: Attach the Faceguard Side pieces to the Helmet pieces where shown. Attach the Faceguard Front pieces to the Faceguard Side pieces where shown.

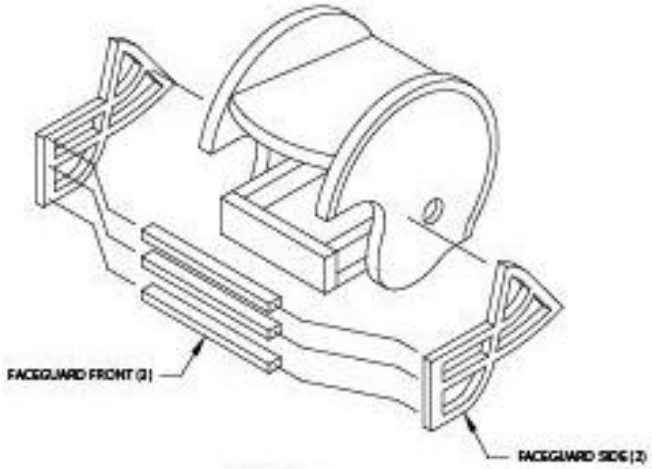
FINISHING: Colors can be selected and applied to represent those of your favorite football team. For the project pictured, the Front, Side, Bottom, and Faceguard pieces were painted white. The Top, Back, and Helmet were painted red. The "ear hole" of the Helmet was painted black.



STEP #1



STEP #2



STEP #3

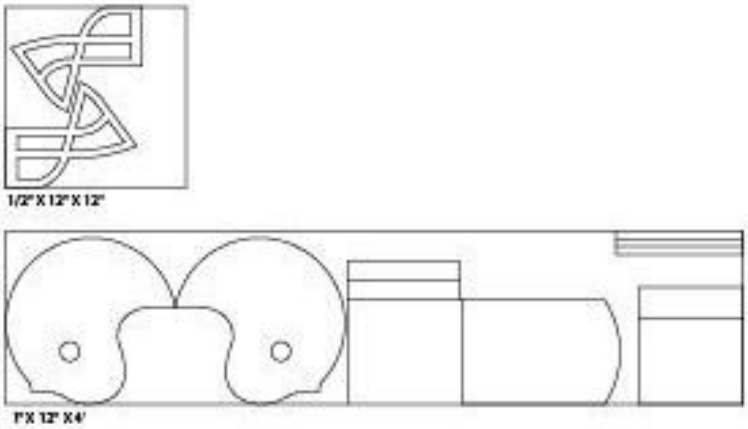
BILL OF MATERIALS

QTY.	PART	SIZE OF MATERIAL
2	Faceguard Side	½" x 6¾" x 8½" (13 x 175 x 216mm) plywood
3	Faceguard Front	½" x ¾" x 8¼" (13 x 19 x 210mm) (not drawn)
2	Side	¾" x 11¼" x 7½" (19 x 32 x 191mm) (not drawn)
1	Front	¾" x 2" x 6¾" (19 x 51 x 171mm) (not drawn)
1	Bottom	¾" x 6¾" x 7½" (19 x 171 x 191mm) (not drawn)
1	Back	¾" x 5¾" x 6¾" (19 x 143 x 171mm)
1	Top	¾" x 6¾" x 10¼" (19 x 171 x 260mm)
2	Helmet	¾" x 10⅞" x 11⅛" (19 x 276 x 283mm)

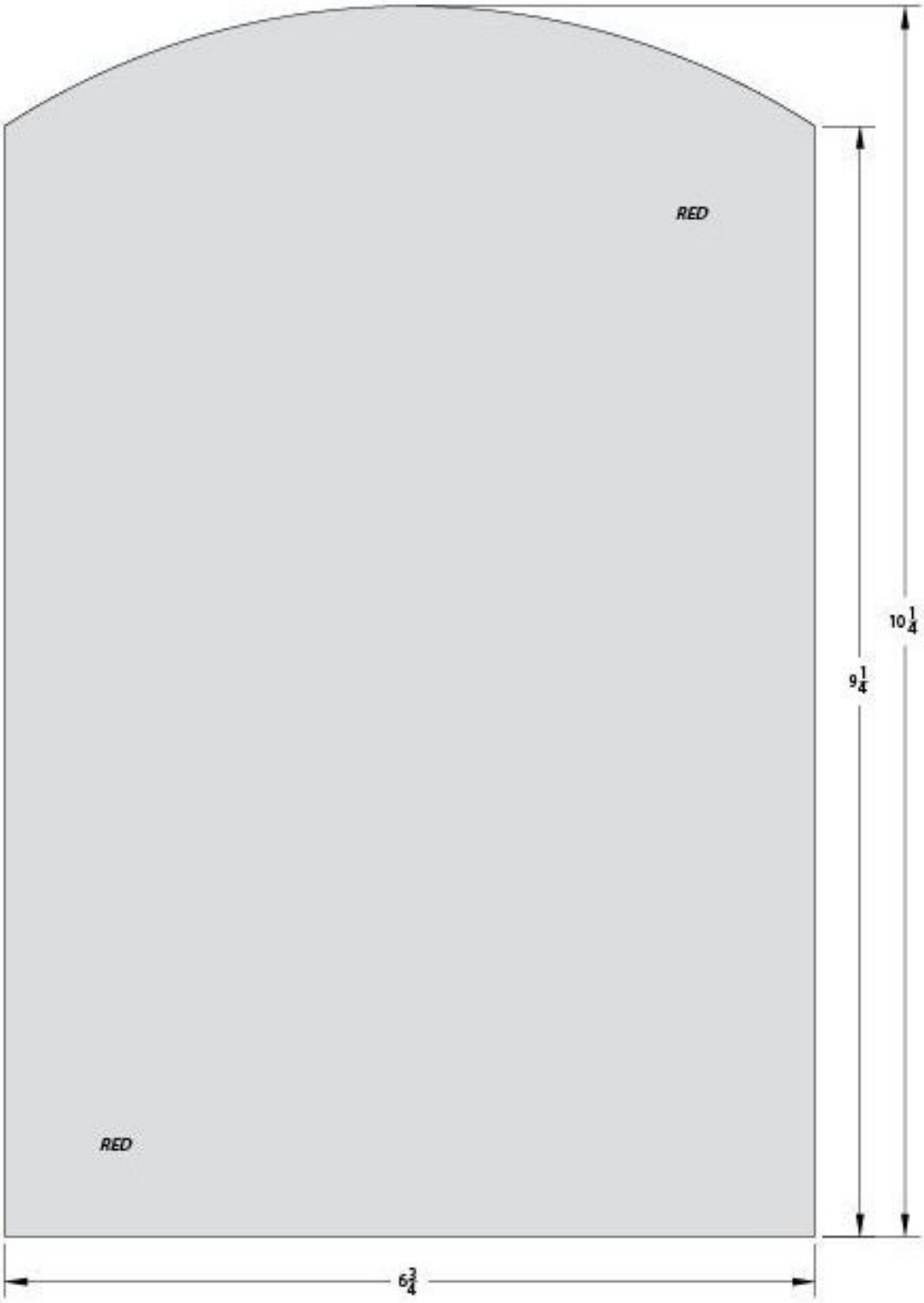
PAINT

Exterior Acrylic Latex Primer and Gloss or Semi-Gloss Exterior Acrylic Latex paint is recommended. Note: Use colors suggested or choose the colors of your favorite team.

QTY.	GENERIC COLOR
1 ea.	Black, White, Red

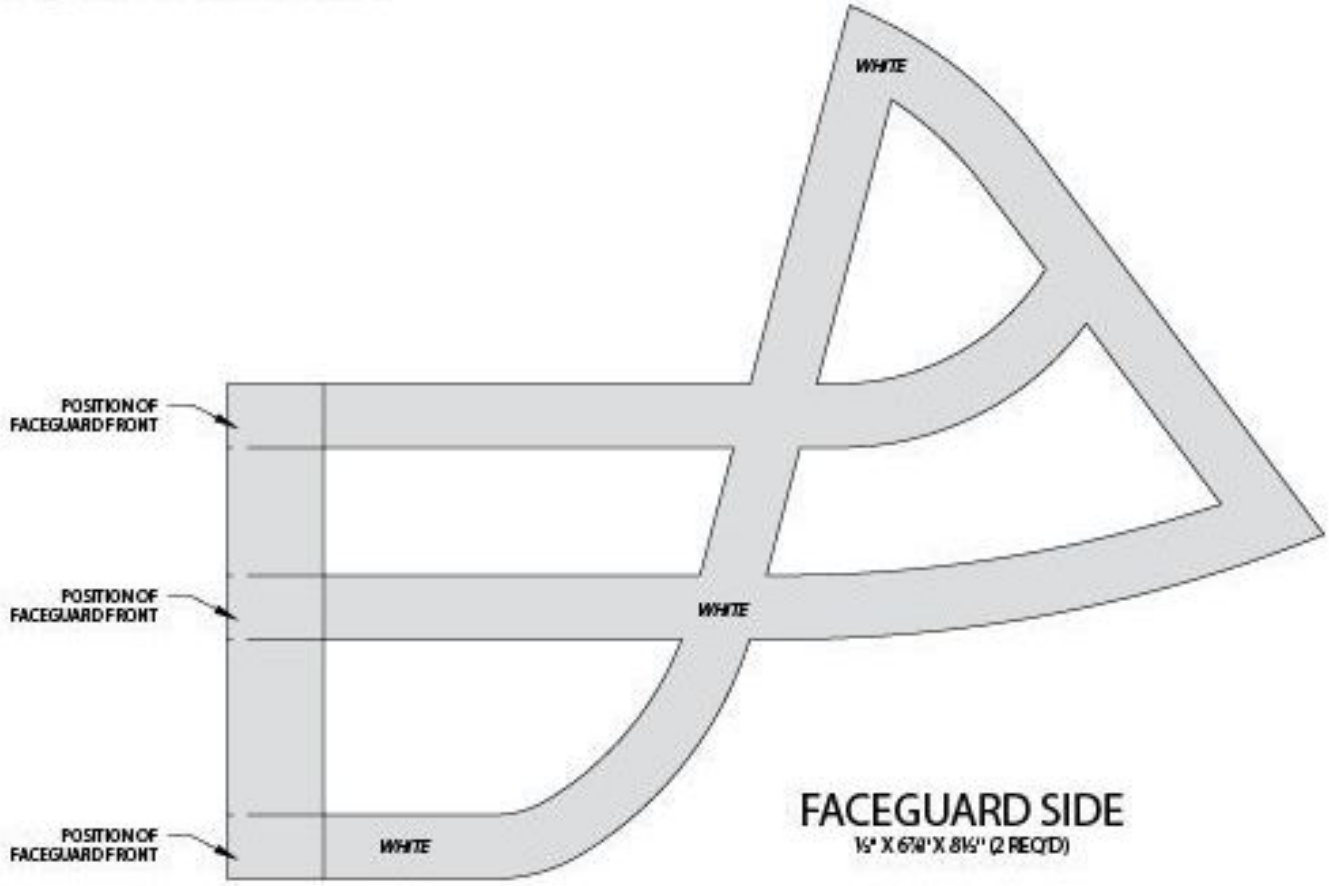


CUTTING DIAGRAM

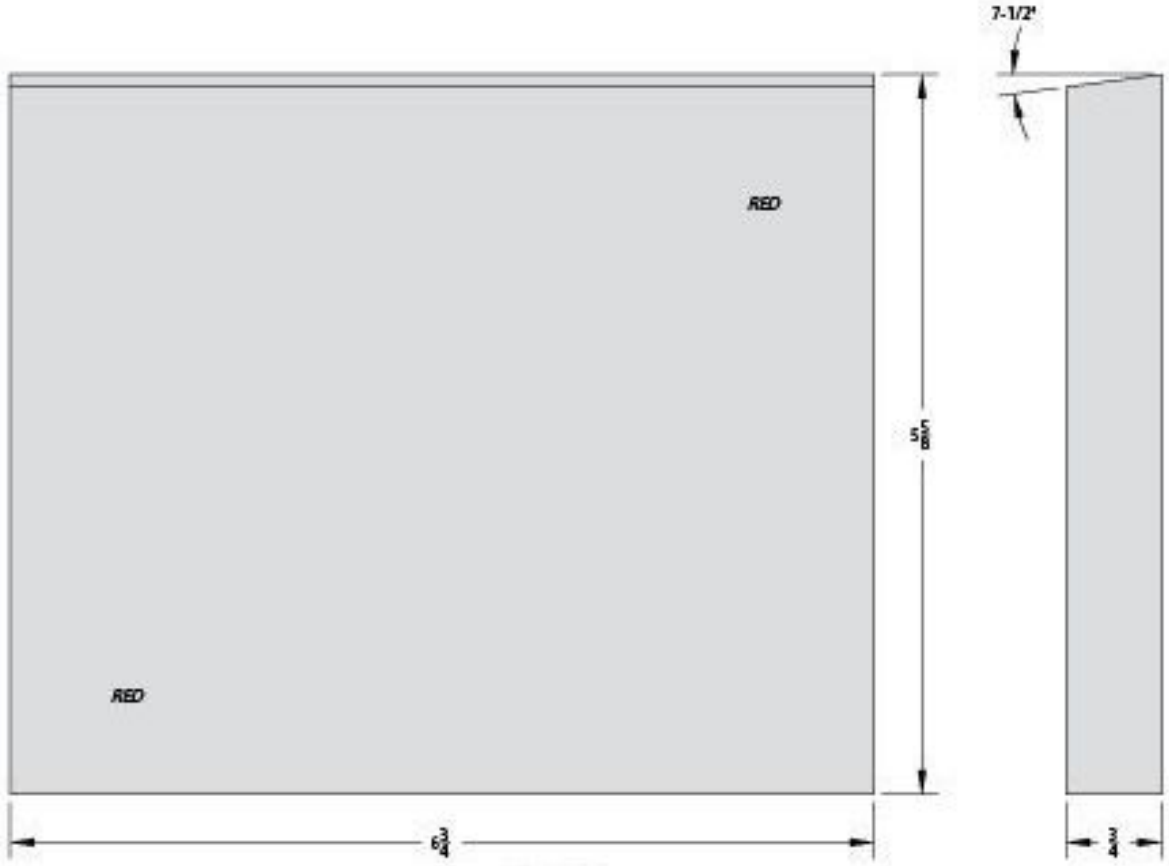


TOP
½" X 6¾" X 10¼"

ENLARGE PATTERN 125%

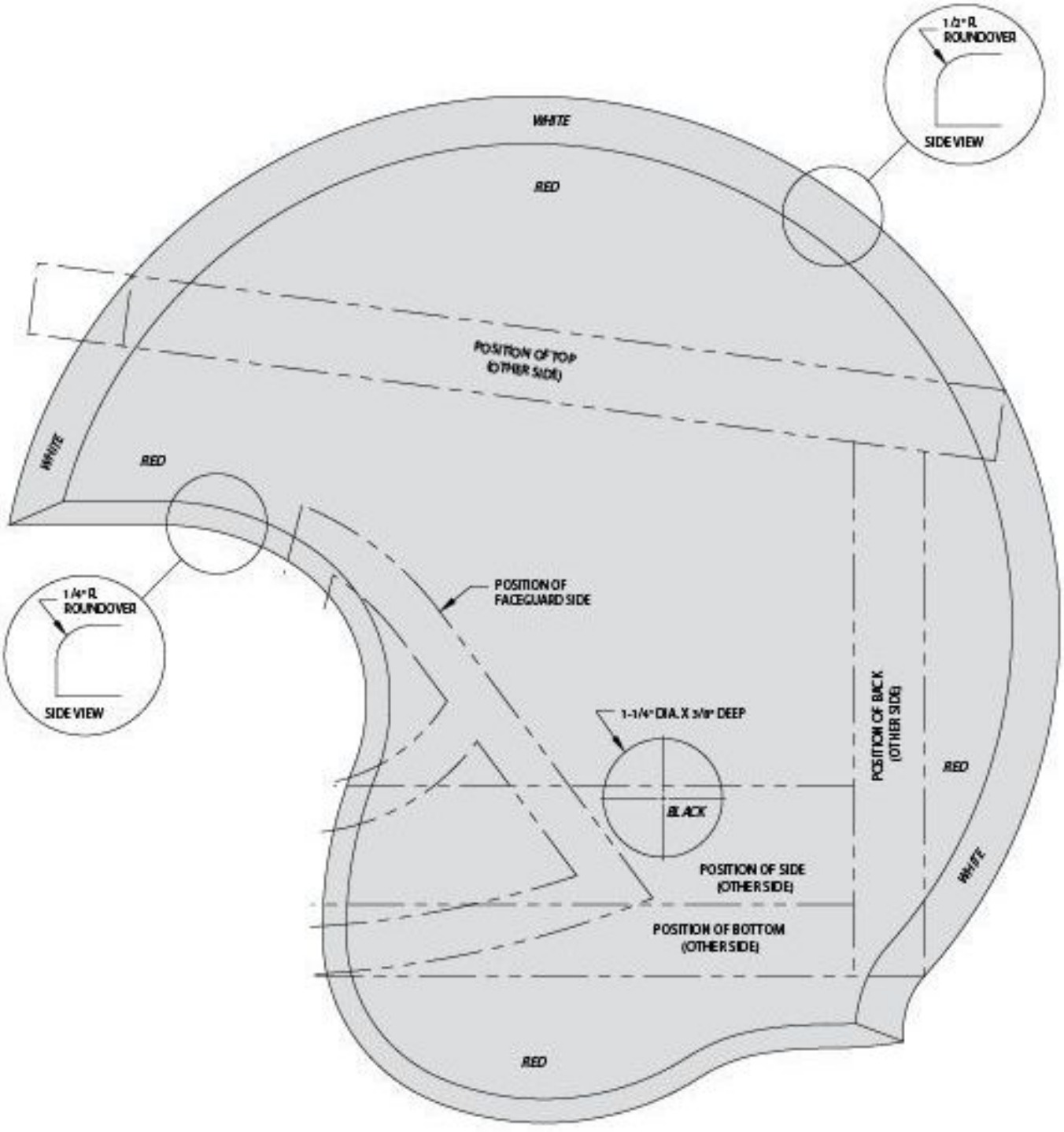


FACEGUARD SIDE
1/4" X 6 7/8" X 8 1/2" (2 REQ'D)



BACK
3/4" X 5 5/8" X 6 3/4"

ENLARGE PATTERNS 150%



HELMET

½" X 10⅞" X 11¼"
(1 RH & 1 LH REQ'D) (RH SHOWN)

ENLARGE PATTERN 160%

BIRD FEEDER FACES

HIS HOPPER-STYLE BIRDFEEDER HAS A MAN'S FACE ON EACH END—EACH WITH A SLIGHTLY DIFFERENT FACIAL EXPRESSION. It reminds me of the "old man in the tree." For thousands of years people have believed that the oldest trees in the forest were inhabited by very wise spirits. In fact, it is said that the expression knock on wood comes from the belief that when you knock on a piece of wood, you can consult the spirit that once lived in it. The expression is often used to avoid "tempting fate" after making some boast: "I have never had a flat tire, knock on wood." The boaster then quickly knocks on a piece of wood, (or something that looks like wood) usually without knowing why.

The birdhouse's large hopper holds up to five pounds of bird feed. The narrow top section assembly lifts straight up on the rope making it is easy to fill the hopper with seed. The finished project measures 17½" (444mm) H x 16" (406mm) W x 12¾" (324mm) D.

PLAN OF PROCEDURE

This project pictured at left was built from cedar. The cutting diagram shows one way to lay out the parts. Although most pieces are called out in the Bill of Materials as being ¾" (19mm) thick, the cedar boards pictured were slightly thicker. Stock up to ⅞" (22mm) thick can be used with this design. Using stock that is thicker than ¾" (19mm) requires some size adjustments.

The majority of the assembly is done with water-resistant glue and finishing nails.

Cedar is sometimes sold with one rough side. We faced the rough side out wherever possible.

The eye #1B and #2B pieces were cut from ½" stock. Re-sawed a strip of ¾" thick stock to ½" thickness on a table saw, and then saw out these parts on a scroll saw.

Begin by cutting each of the parts as described below. Then assemble the project according to the Final Assembly instructions and as shown in the Assembly Drawing.

BOTTOM 1A: Lay out and cut to size from ¾" (19mm) stock according to the Bill of Materials.

BOTTOM 1B, PERCH: Lay out and cut to size from ¾" (19mm) stock according to the Bill of Materials. (Two pieces each required.)

SIDE 1A: Lay out and cut to size from ¾" (19mm) stock. (Two pieces required.)

SIDE 1B: Lay out and cut to size from ¾" (19mm) stock. Cut the ¼" (3mm) wide x ¼" (6mm) deep groove. Drill the ½" (13mm) diameter hole through. (Two pieces required.)

ROOF 1A, ROOF 1B: Lay out and cut to size from ¾" (19mm) stock. Cut the 30° bevel. (Two pieces required.)

ROOF 1C: Lay out and cut to size from ¾" (19mm) stock according to the Bill of Materials. (Two pieces required.)

EAR, EYEBROW: Transfer the pattern onto ¾" (19mm) stock and cut out. (Four pieces each required.)

HAIR: Transfer the pattern onto ¾" (19mm) stock and cut out. (Two pieces required.)

EYE 1A, MOUTH 1A, MOUTH 1C, MOUTH 2: Transfer the patterns onto ¾" (19mm) stock and cut out.

EYE 1B: Transfer the pattern onto ½" (13mm) stock and cut out. Drill the ¼" (6mm) diameter holes through.

EYE 1C, EYE 2A, EYE 2C: Transfer the patterns onto ¾" (19mm) stock and cut out. (Two pieces each required.)

EYE 2B: Transfer the pattern onto ½" (13mm) stock and cut out. Drill the ¼" Dia. hole through. (Two pieces each required.)

NOSE, NOSTRIL: Transfer the patterns onto ¾" (19mm) stock and cut out. (Four pieces each required.)

MOUTH 1B: Transfer the pattern onto ½" (13mm) stock and cut out.

SANDING: Finish sand all parts.

FINAL ASSEMBLY:

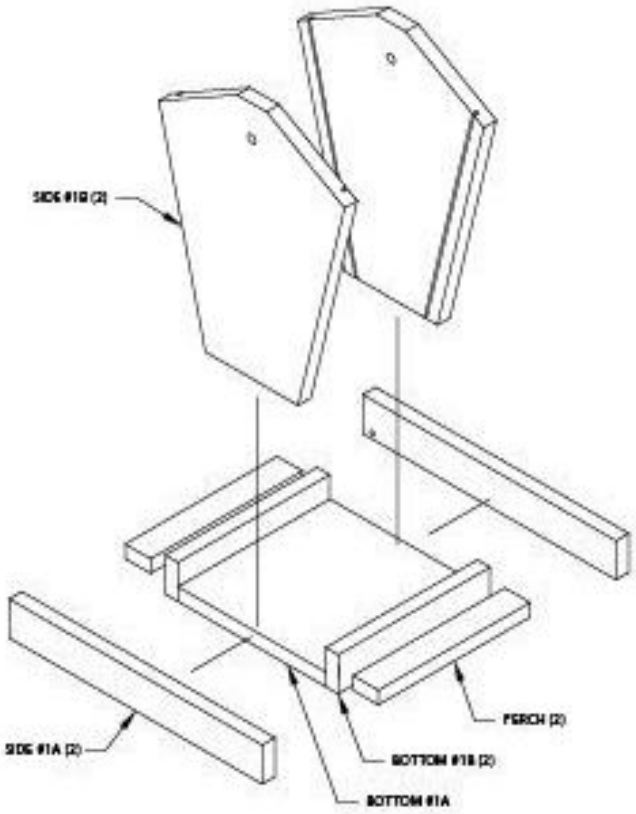
STEP 1: Glue and nail the Bottom #1B pieces to the Bottom #1A piece. Glue and nail the Side #1A pieces to the Bottom assembly. Position Perch pieces where shown on the drawing of the Side #1A piece. Glue and nail in place. Drive a 1¼" (32mm) x #18 gauge wire brad through the edge of the Side #1B pieces to stop the plastic plate 1" (25mm) from the Bottom. (There will be a gap along the top edge as well). Glue and nail the Side #1B pieces to the Side #1A and Bottom #1A pieces where shown.

STEP 2: Slide the Acrylic Plastic in the grooves in the Side #1B pieces. Glue and nail the Roof #1C pieces to the Side #1B pieces where shown.

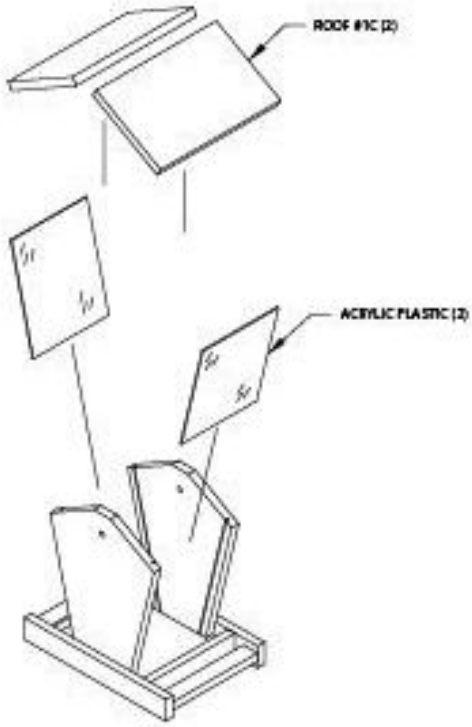
STEP 3: Glue and nail the Roof #1B pieces together as shown. (Do not nail in the area where you will be drilling the 13/32" (11mm) diameter holes.) Glue and nail the Roof #1A pieces to the Roof #1B assembly. Drill 13/32" (11mm) diameter holes through approximately ¾" (19mm) from each end. A piece of Rope may then be passed through the 13/32 (11mm) holes in the Side and Roof pieces to make a removable top and a convenient way to hang the feeder. Tie knots on the inside of the feeder to secure the Rope in place.

STEP 4: Glue and nail the Ears to the edges of the Side piece where shown. Glue and nail the Hair pieces in place. Glue and nail all remaining face pieces to the Side pieces as shown. Insert the Plastic Eyes.

FINISHING: If you make this project from cedar or redwood, omit wood finish and let the wood weather. You could also brush a coat of exterior wood preservative or sanding sealer followed by a coat of exterior polyurethane.



STEP #1



STEP #2

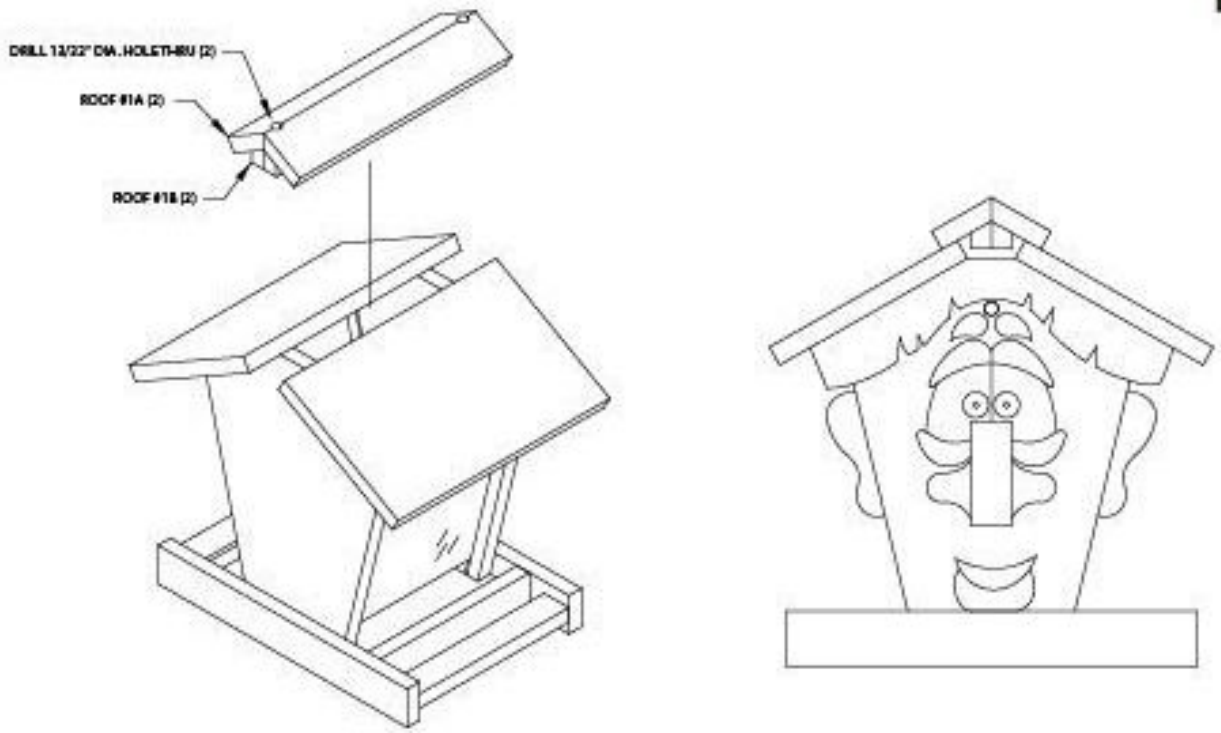
BILL OF MATERIALS

FEEDER

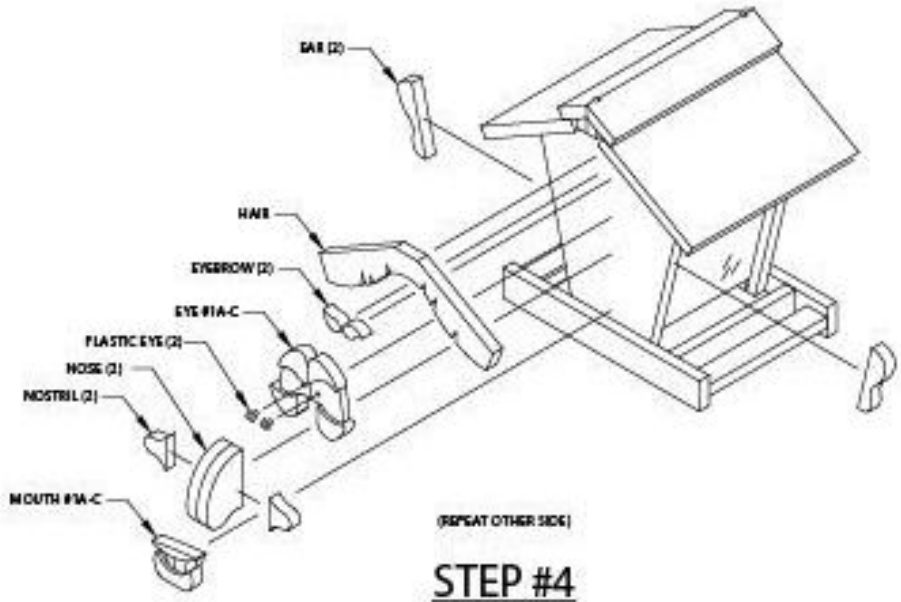
QTY.	PART	SIZE OF MATERIAL
1	Bottom #1A	¾" x 8¾" x 9" (19 x 222 x 229mm) (not drawn)
2	Bottom #1B	¾" x 2" x 9" (19 x 51 x 229mm) (not drawn)
2	Perch	¾" x 1½" x 9" (19 x 38 x 229mm) (not drawn)
2	Side #1A	¾" x 2" x 15" (19 x 51 x 381mm)
2	Side #1B	¾" x 11" x 14⅛" (19 x 279 x 359mm)
2	Roof #1A	¾" x 2½" x 12¾" (19 x 64 x 324mm)
2	Roof #1B	¾" x 1" x 12¾" (19 x 25 x 324mm)
2	Roof #1C	¾" x 7⅞" x 12¾" (19 x 200 x 324mm) (not drawn)
1	Rope	¾" (19mm) Dia. x 4' (1.22m)
2	Acrylic Plastic	⅛" x 8" x 10" (2 x 203 x 254mm)

FACES

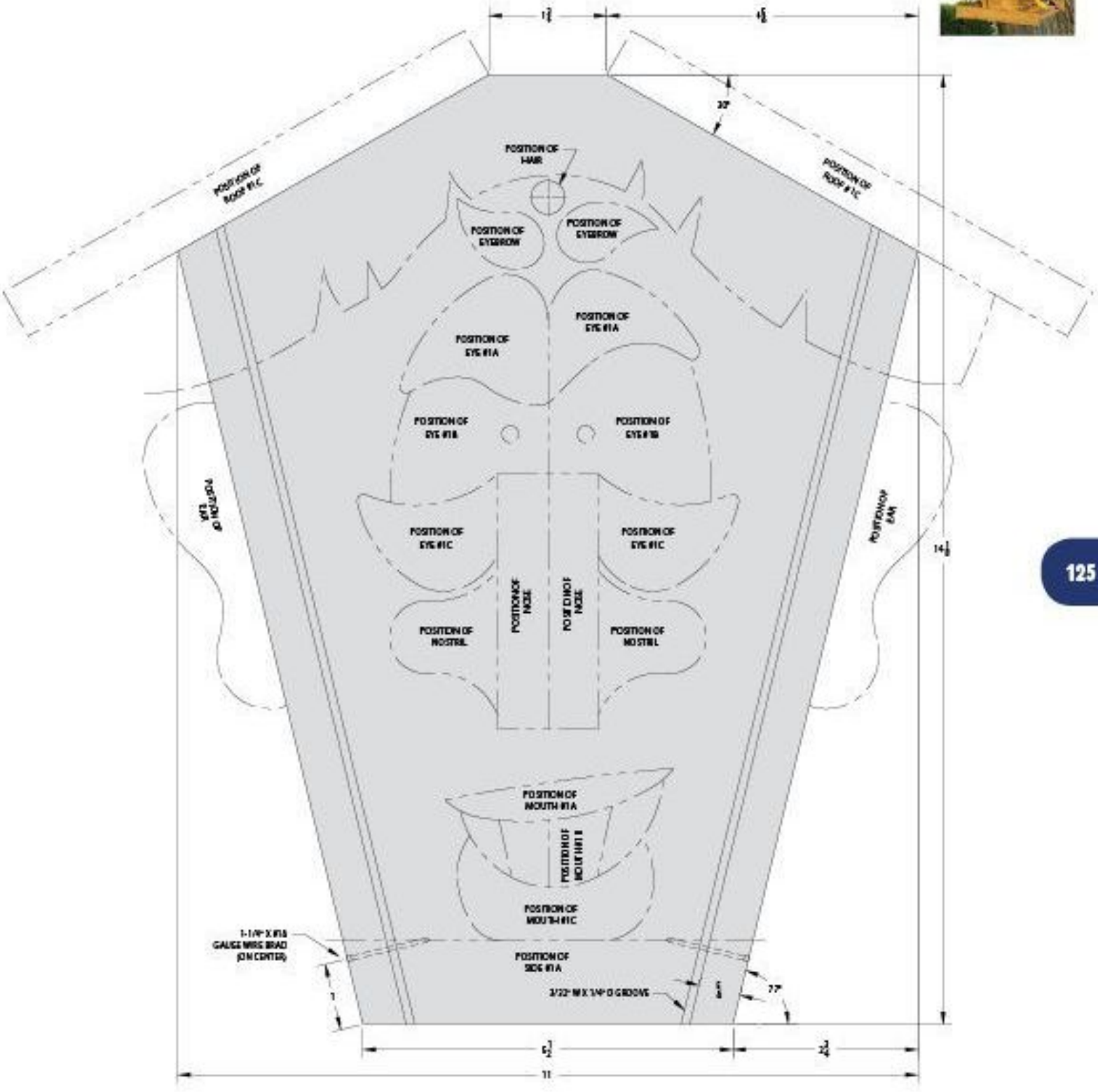
QTY.	PART	SIZE OF MATERIAL
4	Ear	¾" x 1¼" x 4¾" (19 x 32 x 121mm)
2	Hair	¾" x 4⅝" x 13¼" (19 x 117 x 337mm)
4	Eyebrow	¾" x 1" x 1⅜" (19 x 25 x 35mm)
1	Eye #1A	¾" x 2" x 4½" (19 x 51 x 114mm)
1	Eye #1B	½" x 2⅜" x 4¾" (13 x 60 x 121mm)
2	Eye #1C	¾" x 1¾" x 2½" (19 x 44 x 54mm)
2	Eye #2A	¾" x 1¾" x 2¼" (19 x 44 x 57mm)
2	Eye #2B	½" x 2⅜" x 2⅞" (13 x 60 x 73mm)
2	Eye #2C	¾" x 1⅜" x 2" (19 x 35 x 51mm)
4	Nose	¾" x 2¾" x 4⅜" (19 x 70 x 111mm)
4	Nostril	¾" x 1⅜" x 2⅛" (19 x 41 x 54mm)
1	Mouth #1A	¾" x ⅞" x 3⅜" (19 x 22 x 86mm)
1	Mouth #1B	½" x 1⅝" x 3" (13 x 41 x 76mm)
1	Mouth #1C	¾" x 1⅝" x 3" (19 x 41 x 76mm)
1	Mouth #2	¾" x 2" x 3" (19 x 51 x 76mm)
#4	Plastic Eye, Brown	15/16" (24mm) Dia. (#9915)


DRILL 13/32" DIA. HOLE TH-RU (2)
ROOF #1A (2)
ROOF #1B (2)

STEP #3


EAR (2)
HAIR
EYEBROW (2)
EYE #1A-C
PLASTIC EYE (2)
NOSE (2)
NOSTRIL (2)
MOUTH #1A-C
(REPEAT OTHER SIDE)

STEP #4



SIDE #1B

3/4" X 11" X 14 3/4" (2 REQ'D)

ENLARGE PATTERN 200%

"SQUIRRELMOBILE" FEEDER

HAVE A LAUGH WATCHING SQUIRRELS DRIVE THIS SPORTY "MUSCLE CAR" CONVERTIBLE.

Squirrels do just about anything to rob food from bird feeders. Why not just give in and make them one of their very own?

This project is so simple you can make it in a few hours. A cob of corn screws on to a wood screw protruding up from the "front seat." Attach it to a tree and watch a squirrel sit in the car and munch on an ear of corn. Although he won't be wearing a seat belt, it sure will look like he is driving the car.

PLAN OF PROCEDURE

This project is constructed from ¾" (19mm) lumber and assembled with water-resistant glue and nails or screws. A "full thread" wood screw 3" (76mm) long is screwed all the way up through the pieces marked Seat and Block so the threads stick up 1½" (38mm) above the surface. The end of a corncob is then screwed on to the threads of the 3" (76mm) screw.

Paint the car a dark color like red or blue to contrast with the white decal.

This project should be mounted to the side of a tree so the squirrels can access it easily. Choose a height that will be easy to reach, as you are likely to be replacing the cob often.

Begin by cutting each of the pieces as described below. Then assemble the project according to the Final Assembly Instructions and as shown in the Assembly Drawing.

BASE, GRILL, BUMPER: Layout and cut to size from ¾" (19mm) stock.

CAR SIDE: Transfer the pattern onto ¾" (19mm) stock and cut out. (Two pieces required.)

SEAT: Layout and cut to size from ¾" (19mm) stock. Drill the 5/64" (1.9mm) diameter hole through and countersink the bottom side for the 3" (76mm) wood screw.

BLOCK: Layout and cut to size from ¾" (19mm) stock. Drill the 5/64" (1.9mm) diameter hole through.

SANDING: Finish sand all parts.

FINAL ASSEMBLY:

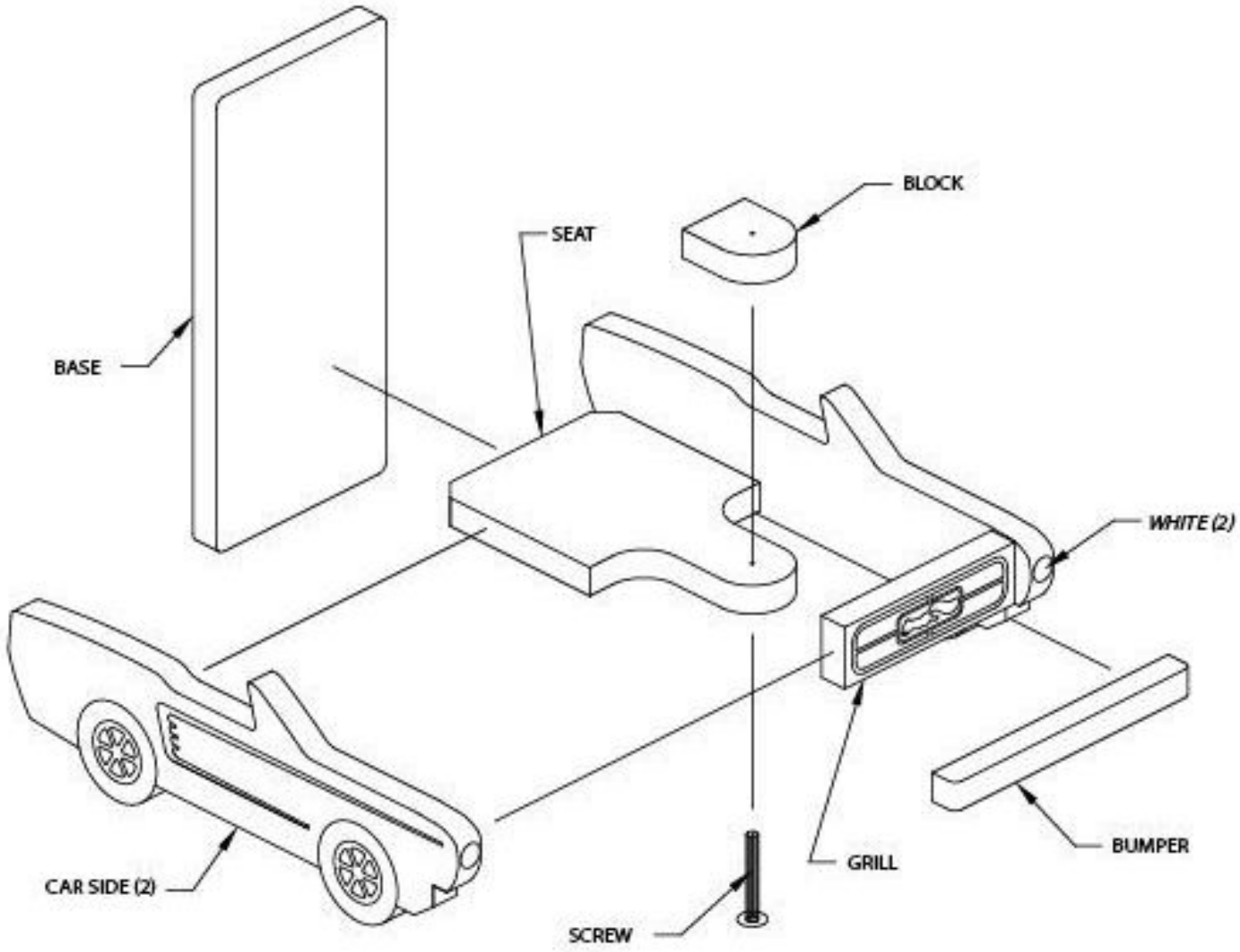
Glue the Block to the top of the Car Seat. Attach the Base piece to the end of the Seat piece. Attach the car sides to the Car Seat, Base, and Grill.

Position the bumper under the Grill and in the notches in the front of the Side Pieces. Attach it to the bottom of the Grill.

Screw a 3" (76mm) full thread exterior screw up through the hole in the Block and Seat.

FINISHING: Brush on a coat of exterior acrylic primer over all wood parts. Let dry and sand smooth with 220-grit sandpaper. Decide on a color to paint the car and paint all areas marked "red" on the pattern drawings. Next paint the areas marked black. Paint the tops of the windows white. You can either paint the white trim on the Grill, Side, and Wheels or you can purchase a pressure sensitive vinyl decal (see Appendix A for source).

Attach the finished project to a post or tree to display. Thread an ear of corn on the screw.



ASSEMBLY DRAWING

BILL OF MATERIALS

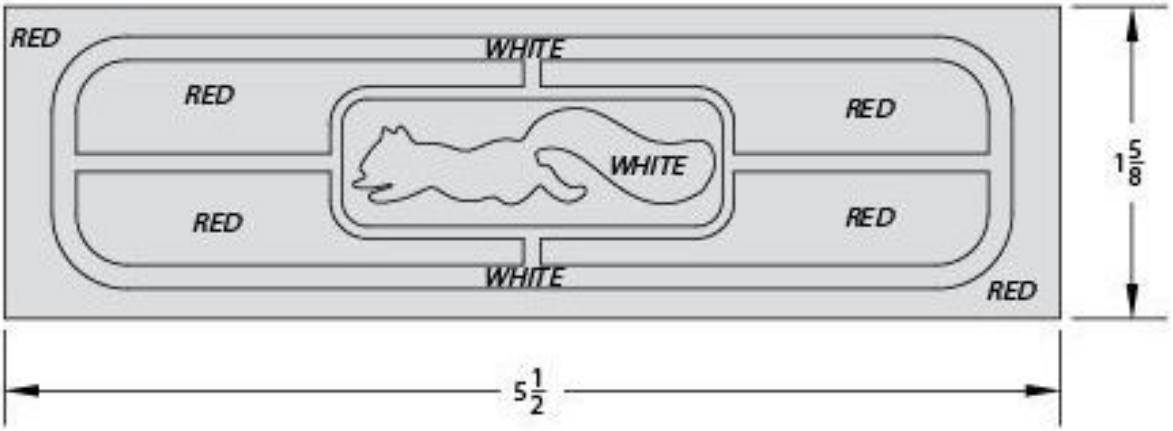
QTY.	PART	SIZE OF MATERIAL
1	Base	¾" x 5½" x 12" (19 x 140 x 305mm)
2	Car Side	¾" x 7" x 15½" (19 x 178 x 394mm)
1	Seat	¾" x 5½" x 8½" (19 x 140 x 216mm)
1	Grill	¾" x 2" x 5½" (19 x 51 x 140mm)
1	Block	¾" x 2" x 2¼" (19 x 51 x 57mm)
1	Bumper	¾" x ¾" x 7¼" (19 x 19 x 184mm)
1	Screw	3" (76mm) x #8
*1	Decal Set	(#1386) (Optional)

PAINT

Exterior Acrylic Latex Primer and Gloss or Semi-Gloss Exterior Acrylic Latex paint is recommended.

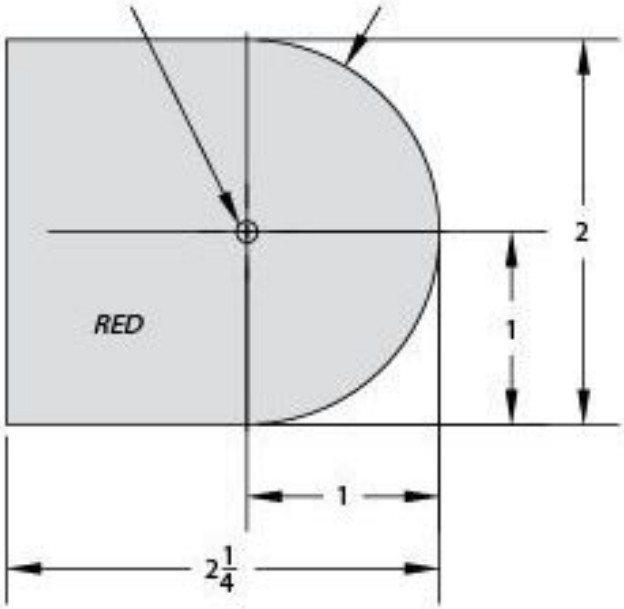
QTY.	GENERIC COLOR
1	White, Black, Red

CUTTING DIAGRAM



GRILL

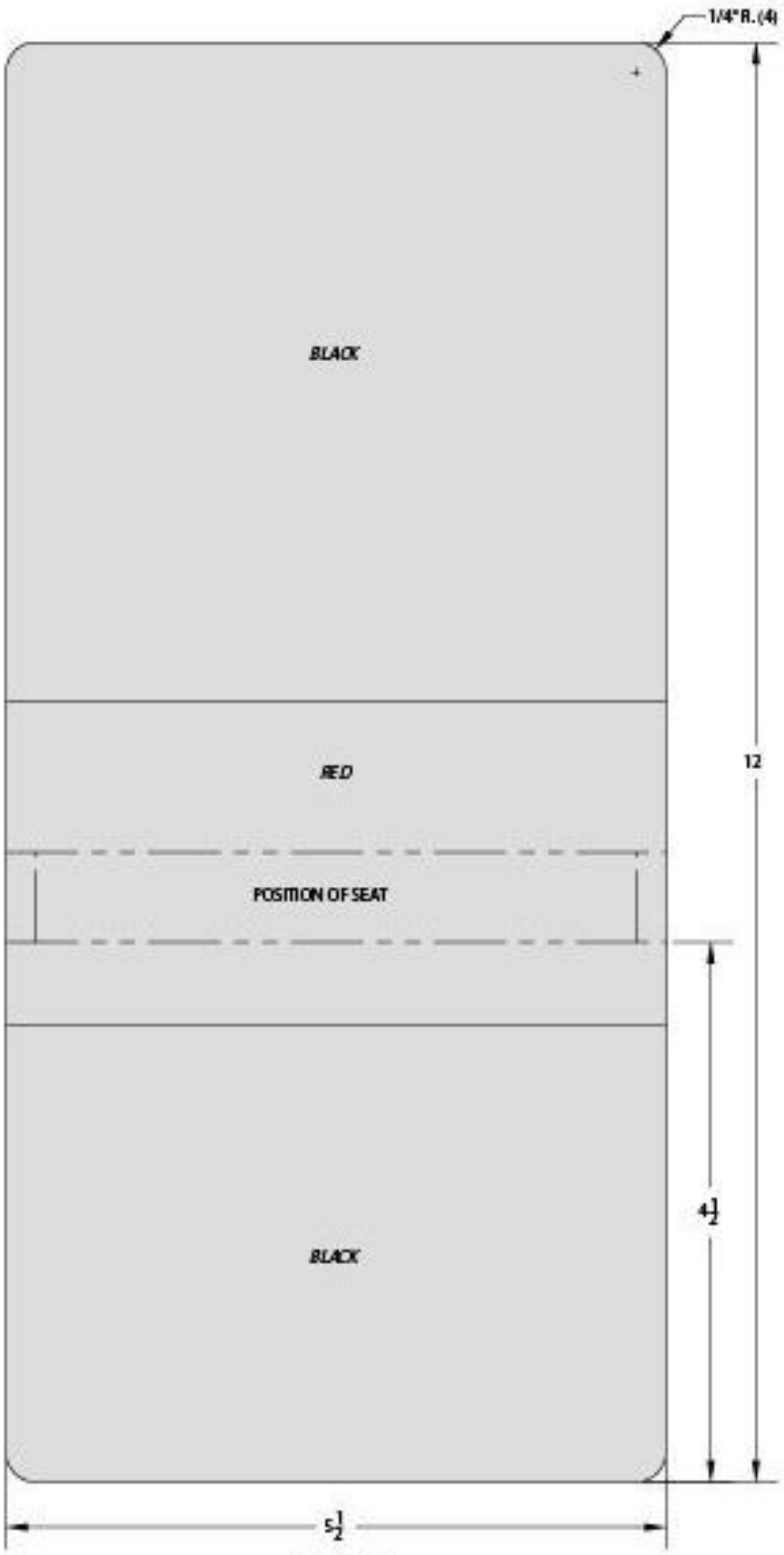
¾" X 1⅝" X 5½"



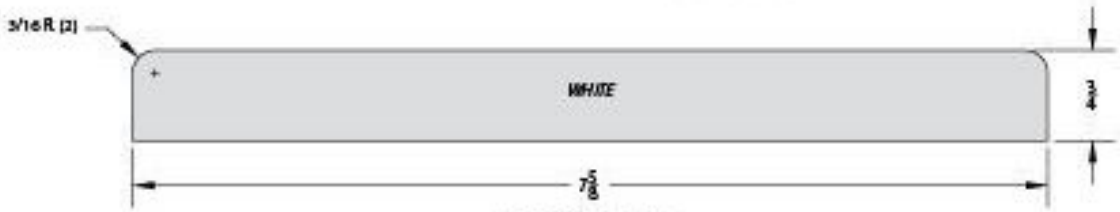
BLOCK

¾" X 2" X 2¼"

PATTERNS AT 100%

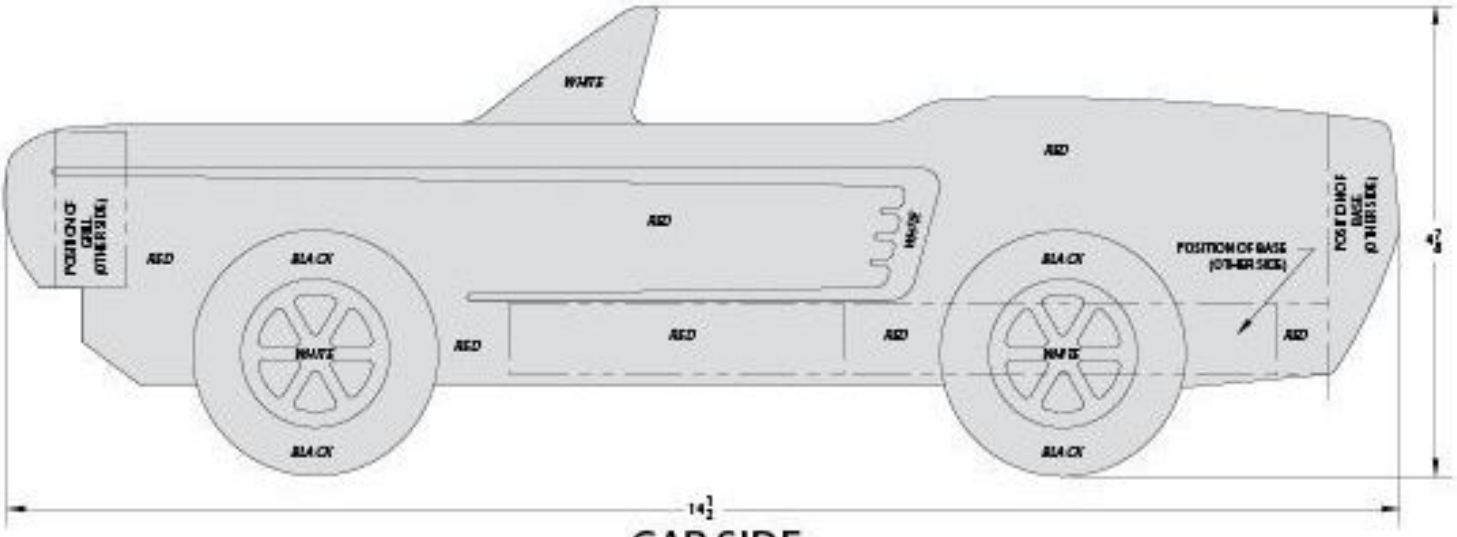


BASE
½" X 5½" X 12"



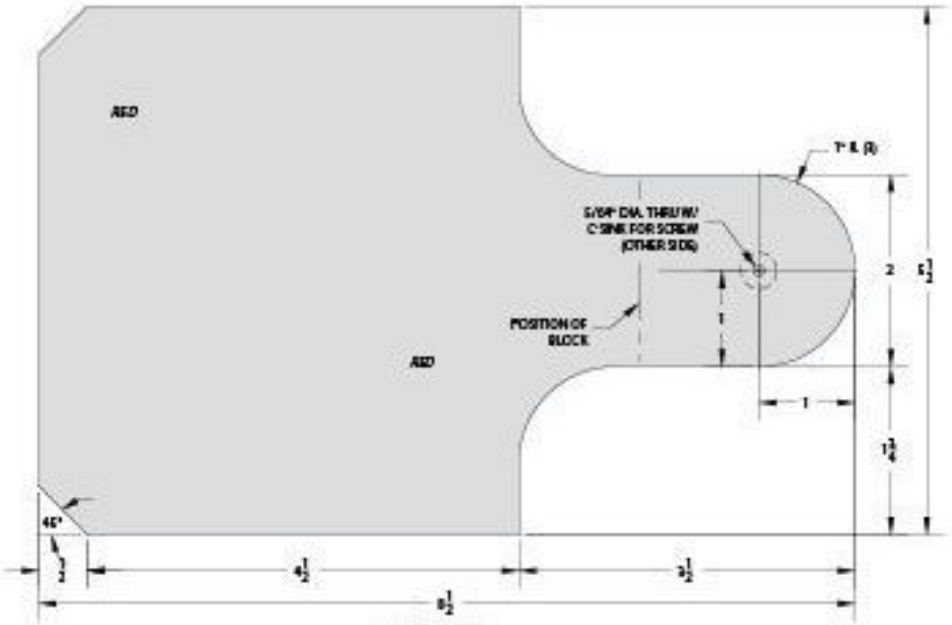
BUMPER
¾" X 1½" X 7⅝"

ENLARGE PATTERNS 160%



CAR SIDE

¾" X 4½" X 14½"



SEAT

¾" X 5½" X 8½"

ENLARGE PATTERNS 200%

TRACTOR SQUIRREL FEEDER

WATCH THOSE COMICAL SQUIRRELS FIND THEIR WAY INSIDE THE GALLON JAR TO GET AT THE FOOD! Some squirrels like to grab a few kernels from the cob then climb back out and sit on top of the tractor to eat. Either way, it's fun to watch the antics as they contort their bodies, twisting and turning to squirm their way through the restricted opening of the cab and into the jar.

Paint this project to match the color of your favorite tractor. The finished project measures approximately 23" (584mm) long.

PLAN OF PROCEDURE

This entire project can be made from a six foot piece of 1" x 8" (19 x 190mm) board and a six-foot piece of 1" x 12" (19 x 280mm) board. Standard construction lumber such as pine works well.

The project is designed around a one-gallon plastic jar (see Appendix A for source). Although a glass jar could be substituted if desired, it should be kept in mind that if the dimensions of the glass jar are not the same as the plastic jar, you may need to adjust the hole diameter in the Cab Front piece, as well as the radius and/or height of the Jar Rest piece to make the glass jar fit properly.

Assembly is done with exterior wood glue, 4-penny finishing nails, and 2" (51mm) x #6 Screws. Suggested screw hole locations are shown on the drawings of the Cab Roof and Tractor Base pieces.

Begin by cutting all parts as described below. Then assemble the project according to the Final Assembly Instructions and the Assembly Drawing.

FRONT WHEEL BRACE, RADIATOR: Lay out and cut to size from ¾" (19mm) stock.

REAR WHEEL HUB, FRONT WHEEL: Lay out and cut to size from ¾" (19mm) stock. (Two pieces each required.)

JAR STOP: Lay out and cut to size from ¾" (19mm) stock. Transfer the pattern and cut out.

JAR REST: Lay out and cut to size from ¾" (19mm) stock. Transfer the pattern and cut out. Note that this piece is designed to fit the plastic 1-gallon jar specified in the Bill of Materials. Other one-gallon jars may be substituted, but may require that you change the radius to match. Adjust as necessary so that the gallon jar will lie horizontally.

REAR WHEEL SPACER, REAR WHEEL FENDER, REAR WHEEL RIM, REAR WHEEL: Transfer the pattern onto ¾" (19mm) stock and cut out. (Two pieces each required.)

CAB SIDE: Lay out and cut to size from ¾" (19mm) stock. Transfer the pattern and cut out. (Two pieces required.)

TRACTOR FRONT: Lay out and cut to size from ¾" (19mm) stock. Transfer the pattern and cut out.

CAB FRONT: Lay out and cut to size from ¾" (19mm) stock. Transfer the pattern and cut out. (The steering wheel detail can be left off if desired.)

CAB BACK: Lay out and cut to size from ¾" (19mm) stock. Drill the ⅛" (3.6mm) diameter holes through and countersink for screws.

TRACTOR BASE: Lay out and cut to size from ¾" (19mm) stock. Transfer the pattern and cut out. Drill the ⅛" (3.6mm) diameter screw clearance holes through. Countersink the two holes for the Front Wheel Mount on the top side. Countersink the remaining 10 holes on the bottom side.

CAB ROOF: Lay out and cut to size from ¾" (19mm) stock. Radius the corners as shown. Drill the ⅛" (3.6mm) diameter Screw clearance holes through and countersink for wood screws.

FRONT WHEEL MOUNT: Glue up ¾" (19mm) stock to 2-¼" (57mm) thick. Lay out and cut to size.

SANDING: Finish sand all parts.

FINAL ASSEMBLY:

Using glue and nails or screws, attach the Cab Front and Cab Back pieces to the Cab Sides. Be sure the countersinks on the Cab Back Piece are on the inside of the Cab. Glue and screw the Cab Roof to the Cab assembly. Glue and screw the Cab assembly to the Tractor Base piece.

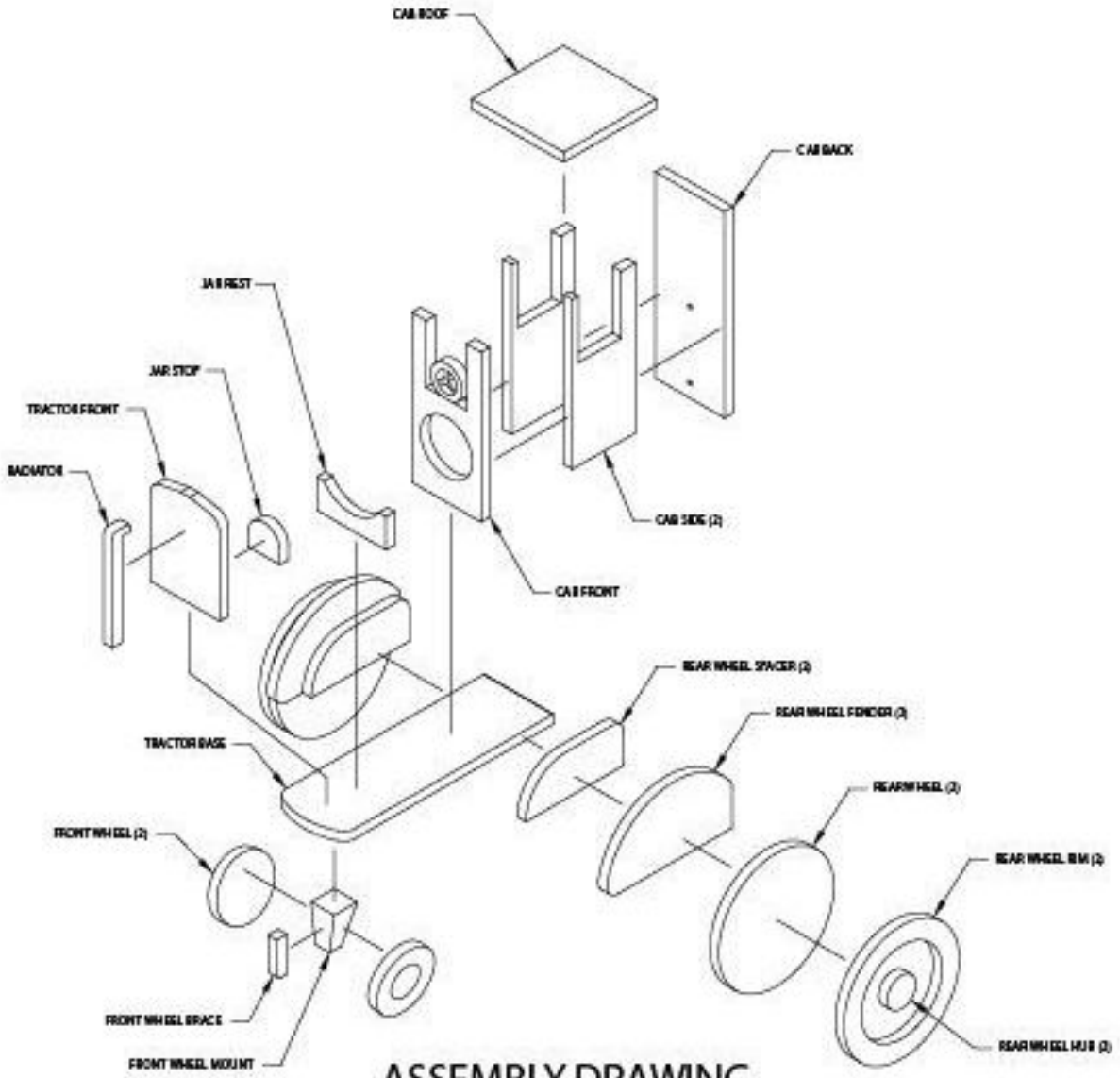
Glue and screw the Front Wheel Mount, Jar Rest, and Tractor Front pieces to the Tractor Base.

Attach the Jar Stop, Radiator, Front Wheel Brace, and Front Wheels.

Attach the Rear Wheel Spacer so it is flush with the bottom and back of the Tractor Base. Attach the Rear Wheel Fender to the Rear Wheel Spacer in the position shown on the drawing of the Rear Wheel Fender.

Attach the Rear Wheel Rim and Rear Wheel Hub to the Rear Wheel pieces. Sand all edges of the Wheel assembly. Attach the Wheel assemblies to the Rear Wheel Fenders.

FINISHING: Use exterior acrylic latex primer and top coats of paint. Paint color recommendations in yellow and green are shown on all parts. Other colors can be substituted.



ASSEMBLY DRAWING

BILL OF MATERIALS

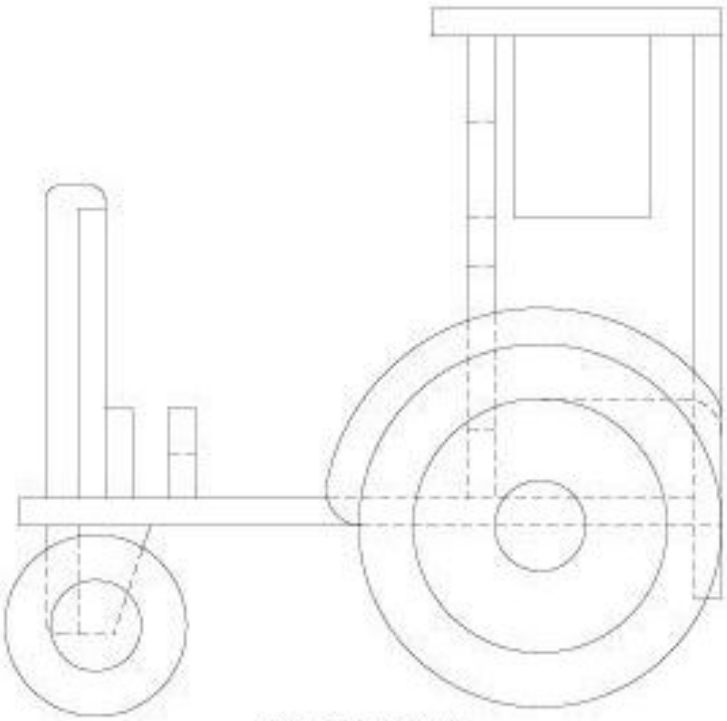
QTY.	PART	SIZE OF MATERIAL
1	Front Wheel Brace	¾" x ¾" x 3" (19 x 22 x 76mm)
1	Radiator	¾" x 1⅝" x 8½" (19 x 41 x 219mm)
2	Rear Wheel Hub	¾" x 2½" (19 x 64mm) Dia.
1	Jar Stop	¾" x 2½" x 2¾" (19 x 64 x 70mm)
1	Jar Rest	¾" x 2½" x 6" (19 x 64 x 152mm)
2	Rear Wheel Spacer	¾" x 3½" x 8½" (19 x 89 x 216mm)
2	Front Wheel	¾" x 5" (19 x 127mm) Dia.
2	Cab Side	¾" x 5½" x 12¾" (19 x 140 x 324mm)
1	Tractor Front	¾" x 6" x 8" (19 x 152 x 203mm)
2	Rear Wheel Fender	¾" x 6" x 10⅞" (19 x 152 x 276mm)

QTY.	PART	SIZE OF MATERIAL
1	Cab Front	¾" x 6" x 12½" (19 x 152 x 324mm)
1	Cab Back	¾" x 6" x 15½" (19 x 152 x 393mm)
1	Tractor Base	¾" x 6" x 18⅝" (19 x 152 x 472mm)
1	Cab Roof	¾" x 8" x 8" (19 x 203 x 203mm)
2	Rear Wheel Rim	¾" x 10" (19 x 254mm) Dia.
2	Rear Wheel	¾" x 10" (19 x 254mm) Dia.
1	Front Wheel Mount	2" x 2" x 3" (51 x 51 x 75mm)
Misc.	Exterior Wood Screw	2" (51mm) x #6
1	Gallon Plastic Jar	

PAINT

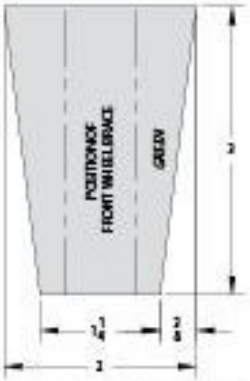
Exterior Acrylic Latex Primer and Gloss or Semi-Gloss Exterior Acrylic Latex paint is recommended.

QTY.	GENERIC COLOR
1	Yellow, Green, Black



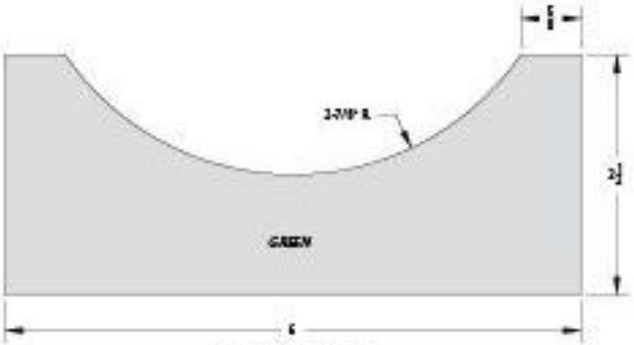
SIDE VIEW

FRONT WHEEL BRACE
¾" X ¾" X 3"

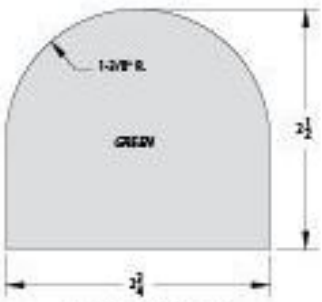


FRONT WHEEL MOUNT
2" X 2" X 3"

RADIATOR
¾" X 1⅝" X 8½"

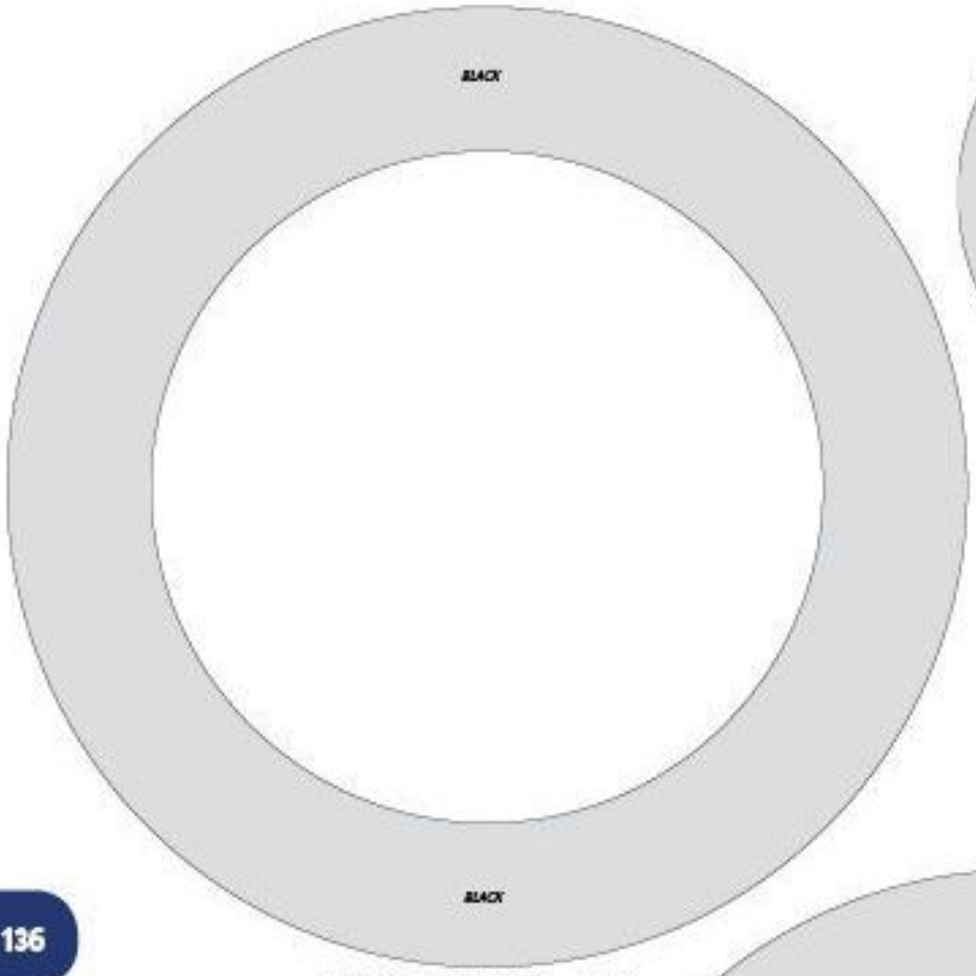


JAR REST
½" X 2½" X 6"

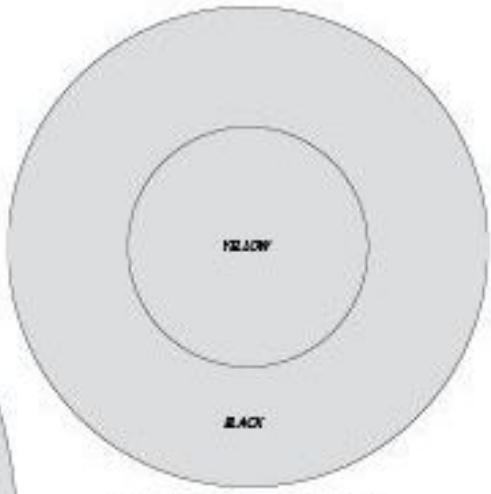


JAR STOP
⅜" X 2½" X 2¾"

ENLARGE PATTERNS 200%

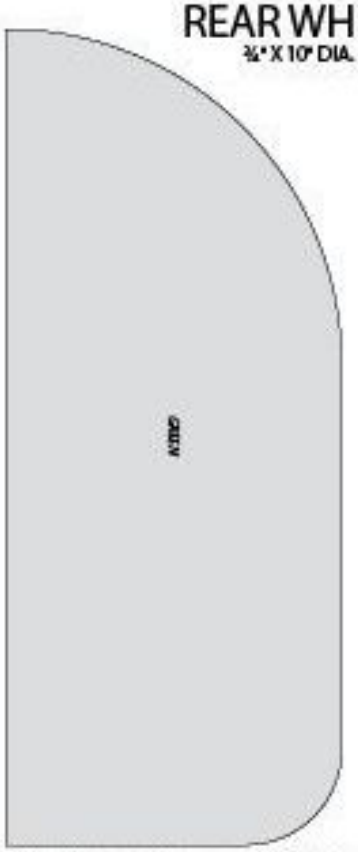


REAR WHEEL RIM
¾" X 10" DIA. (2 REQ'D)

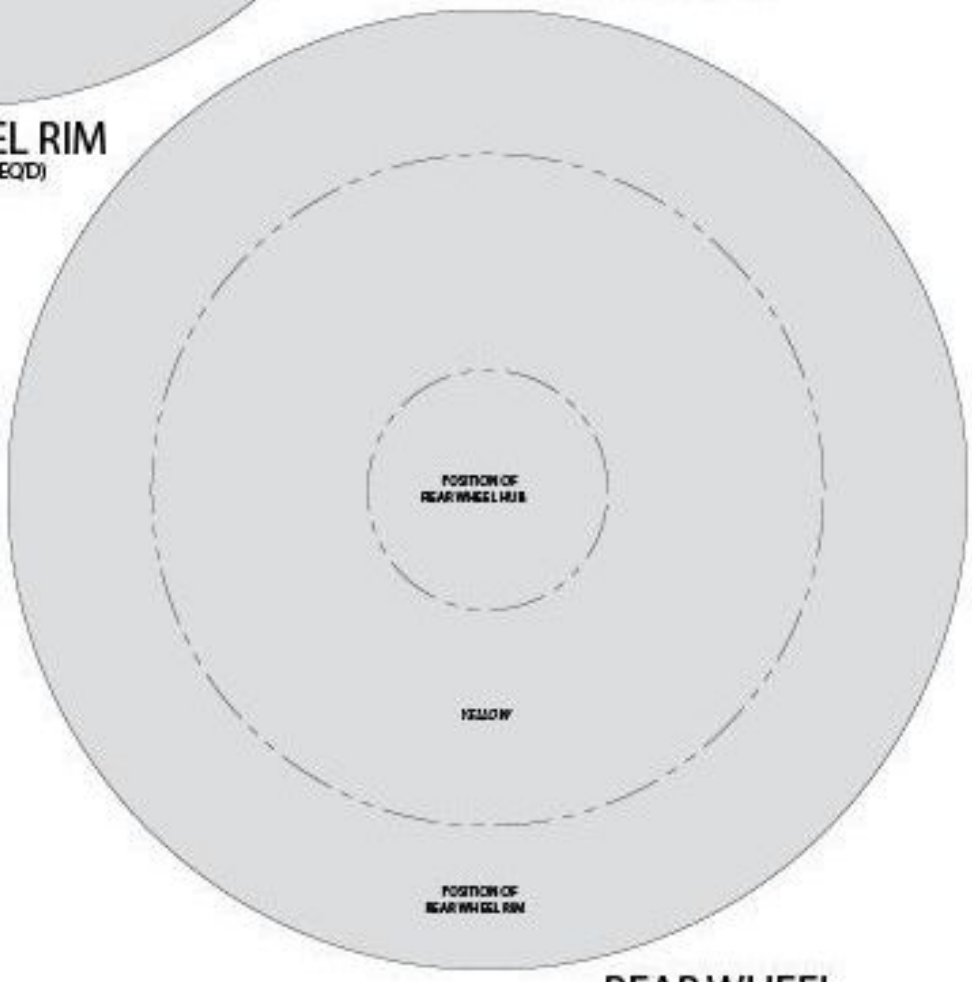


FRONT WHEEL
¾" X 5" DIA. (2 REQ'D)

REAR WHEEL HUB
¾" X 2½" DIA. (2 REQ'D)

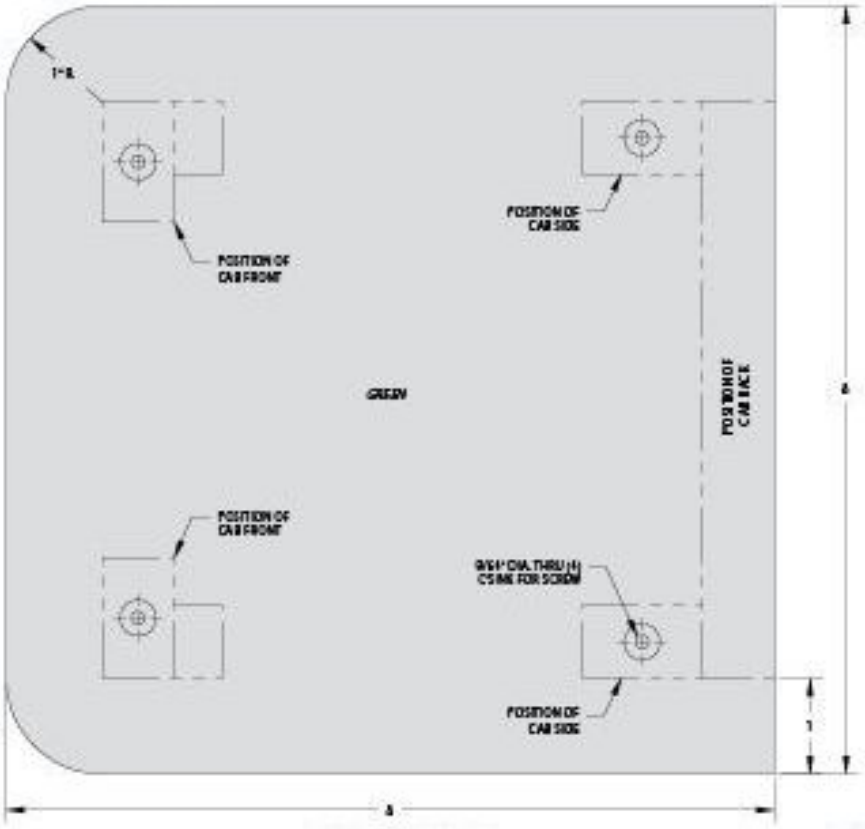


REAR WHEEL SPACER
¾" X 3½" X 8½" (2 REQ'D)



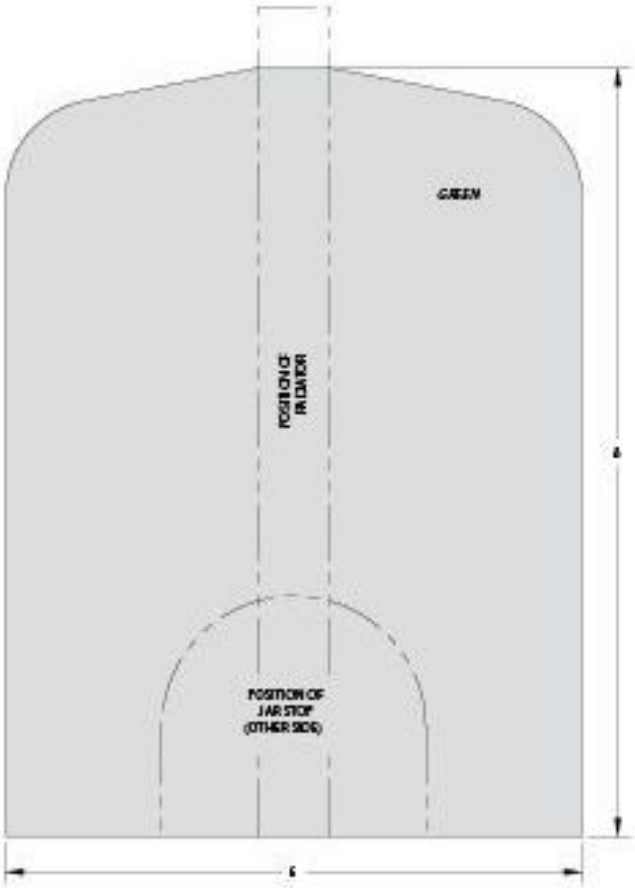
REAR WHEEL
¾" X 10" DIA. (2 REQ'D)

ENLARGE PATTERNS 200%



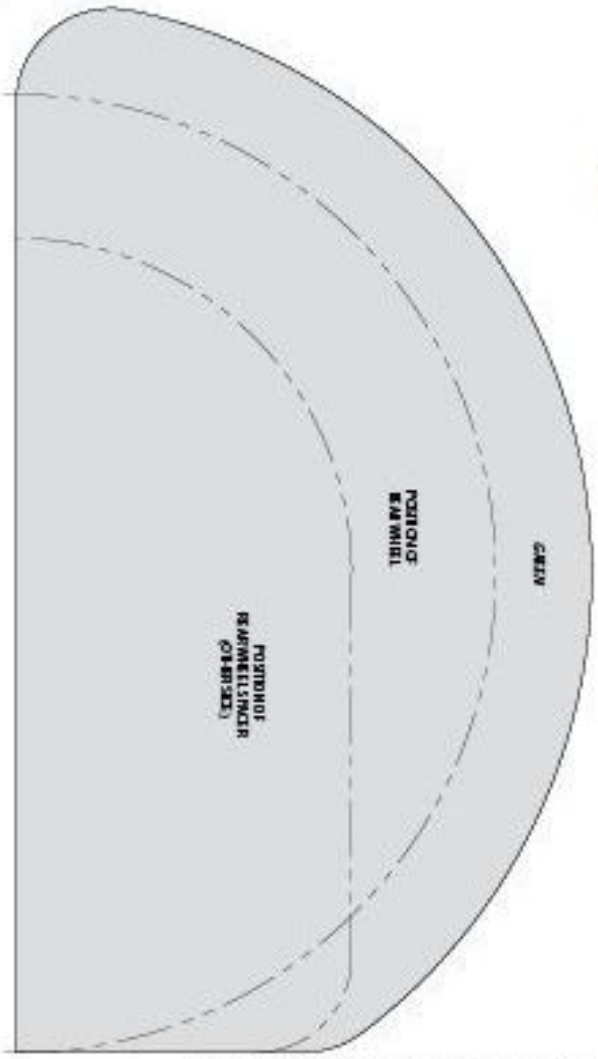
CAB ROOF

½" X 8" X 8"



TRACTOR FRONT

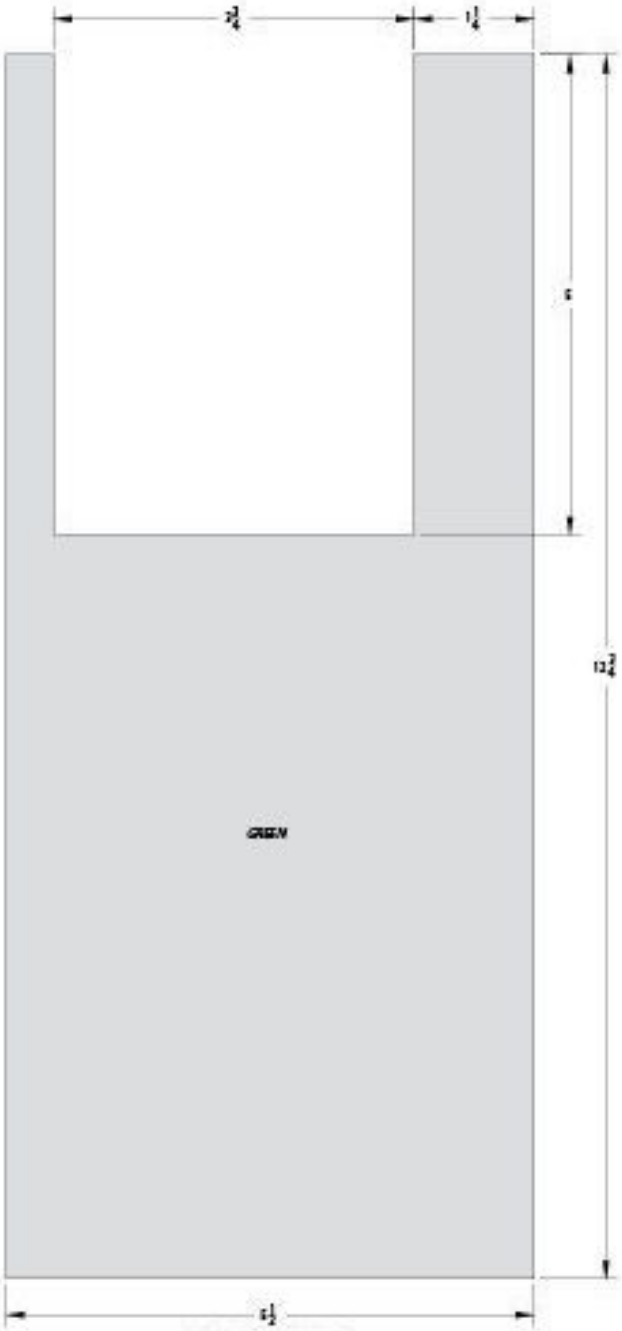
½" X 6" X 8"



REAR WHEEL FENDER

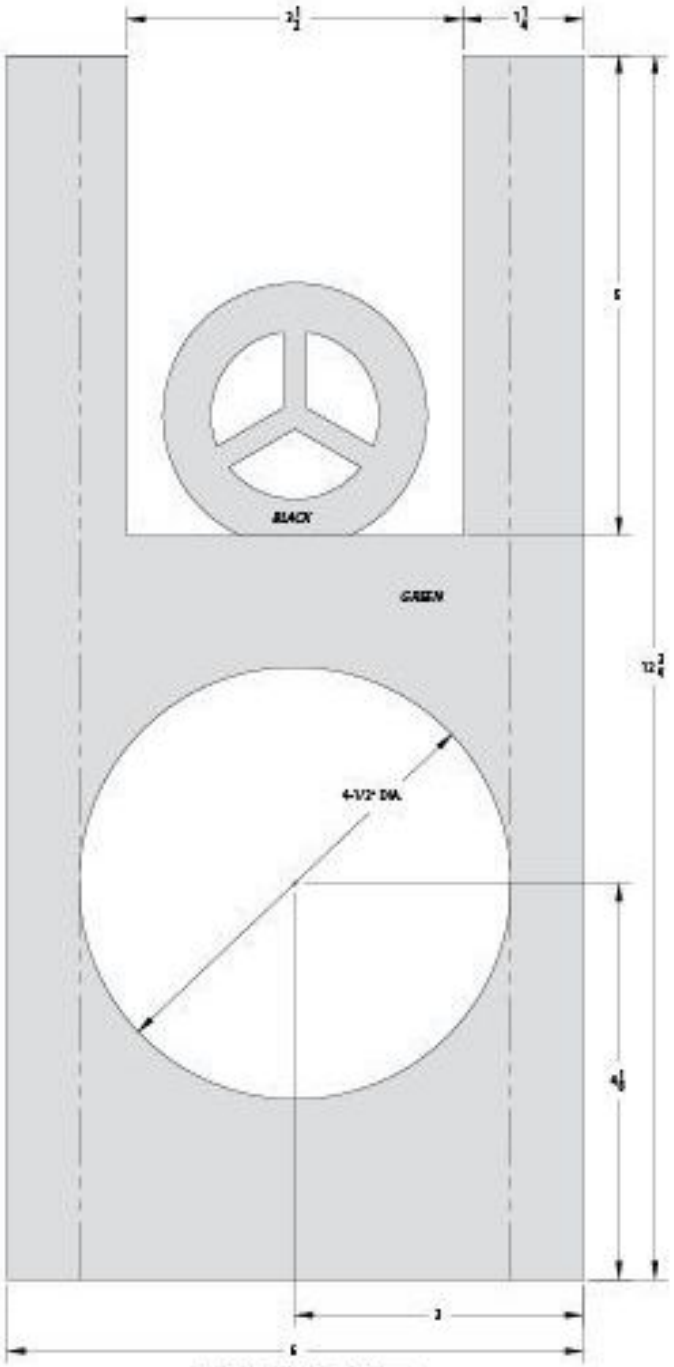
½" X 6" X 10¾" (2 REQ'D)

ENLARGE PATTERNS 200%



CAB SIDE

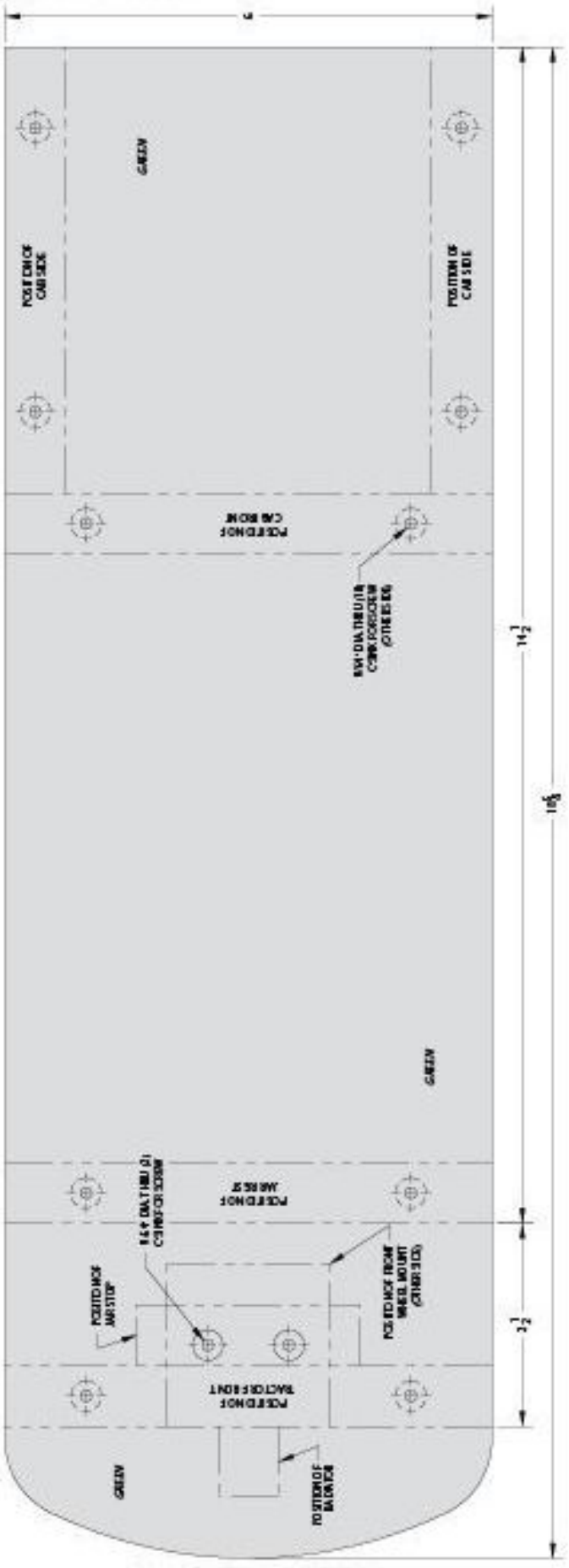
½" X 5½" X 12¾" (2 REQ'D)



CAB FRONT

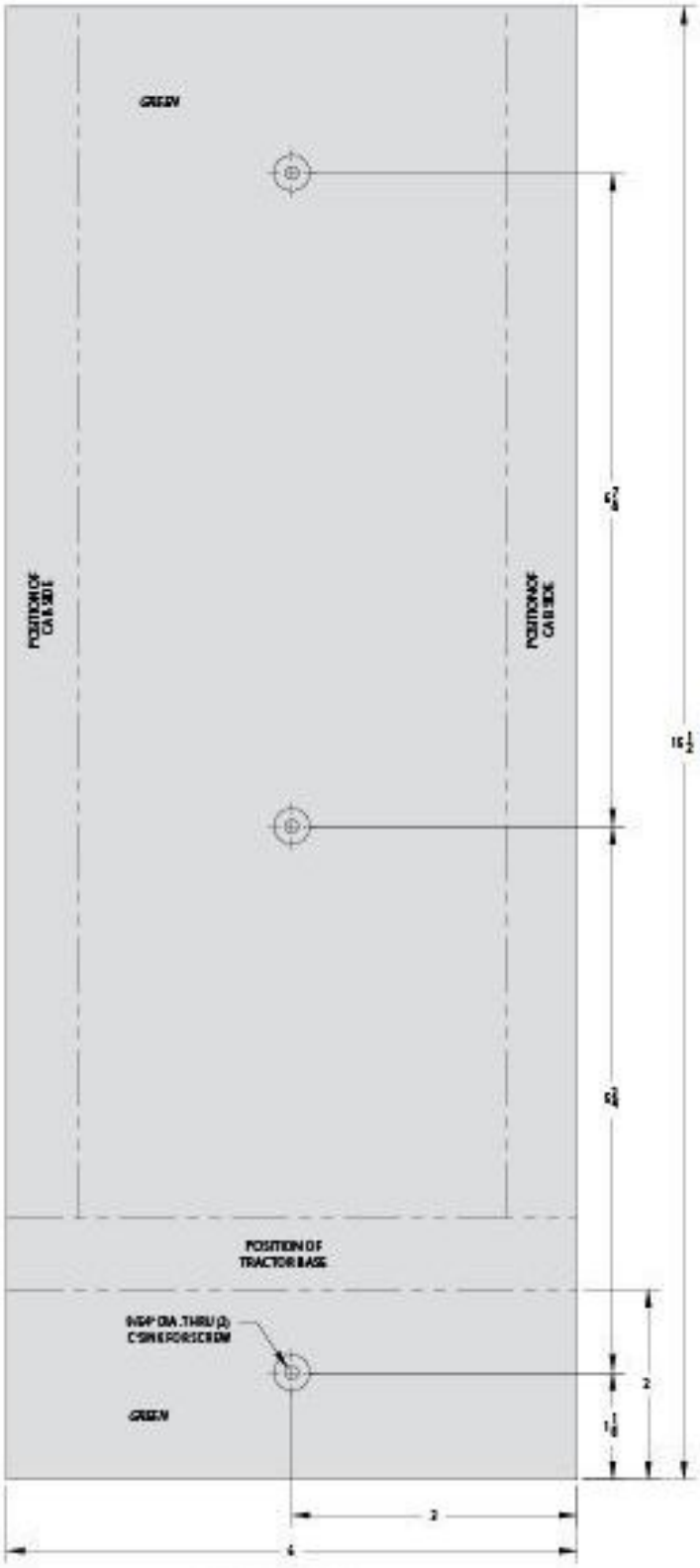
½" X 6" X 12¾"

ENLARGE PATTERNS 200%



TRACTOR BASE

½" X 6" X 18⅝"



CAB BACK

½" X 6" X 15½"

ENLARGE PATTERNS 200%

PLAYER PIANO SQUIRREL FEEDER

YOU'LL GET LOTS OF ENJOYMENT WATCHING SQUIRRELS IN THIS FEEDER LOOK LIKE THEY'RE PLAYING THE PIANO! Player pianos were popular long before electricity was available. After attaching the paper roll containing a song, the player would pump the pedals with his or her feet to build up a vacuum and activate the piano keys that play the music. People would gather around the piano and sing song after song.

For this project, an ear of corn is substituted for the paper roll. A squirrel is substituted for the person pumping the pedals. It rests its paws on the keyboard. And the onlookers inside your home watching out the window are substituted for the crowd singing around the piano.

The hinged top lifts to store extra ears of corn. Screen door hooks will prevent squirrels from robbing the corn stored inside.

The project is easy to make primarily from ¾" (19mm) lumber. The ear of corn spins in a holder so squirrels can get at all of the kernels.

PLAN OF PROCEDURE

This project is constructed primarily from ¾" (19mm) lumber. It is pictured made from pine. A small piece of 1½" (38mm) lumber is used to cut out the Pedal B piece. The project is assembled with exterior glue and nails.

Drawings are provided for all pieces except the Top and Back piece. These parts are simple rectangular shaped pieces. Cut them to the width and length called for in the Bill of Materials.

The Pedal B piece can be made from a scrap piece of two x four (51 x 102mm). Set your table saw blade to 45 degrees and cut a triangular shaped strip 1½" (38mm) wide by 1½" (38mm) high. Then crosscut the piece to 2⅛" (54mm) in length.

Saw slots are cut in the top of the Keyboard A piece to provide definition. The slots can be cut with a ⅛" (3mm) wide blade on a table saw. A thinner blade could also be used as the width of the slot is not critical so long as the spacing is not changed.

The finished project will accept ears of corn from 6 to 6¾" (152 to 171mm) long. Longer ears must be cut shorter—use a knife or a band saw. To mount the corncob, screw a 3" (76mm) long screw into each end. The center of the cob will be soft so it will not be necessary to drill screw pilot holes. The screws should extent out from each end of the ear of corn far enough so the shank of the screw can rest in the "V" pocket of the Side C pieces.

Begin by cutting each of the parts as described below. Then assemble the project according to the Final Assembly instructions and as shown in the Assembly Drawing.

SIDE A, SIDE B, SIDE C: Layout and cut to size from ¾" (19mm) stock. Transfer the pattern and cut out. (Two pieces each required.)

FRONT A, FRONT B, BASE: Layout and cut to size from ¾" (19mm) stock.

BACK, TOP: Layout and cut to size from ¾" (19mm) stock according to the dimensions given in the Bill of Materials.

PEDAL A: Layout and cut to size from ¾" (19mm) stock. (Two pieces required.)

PEDAL B: Layout and cut to size from 1½" (38mm) stock.

KEYBOARD A: Layout and cut to size from ¾" (19mm) stock. Cut the ⅛" (3mm) wide x ⅛" (3mm) deep saw kerfs.

KEYBOARD B: Layout and cut to size from ¾" (19mm) stock.

SANDING: Finish sand all parts.

FINAL ASSEMBLY:

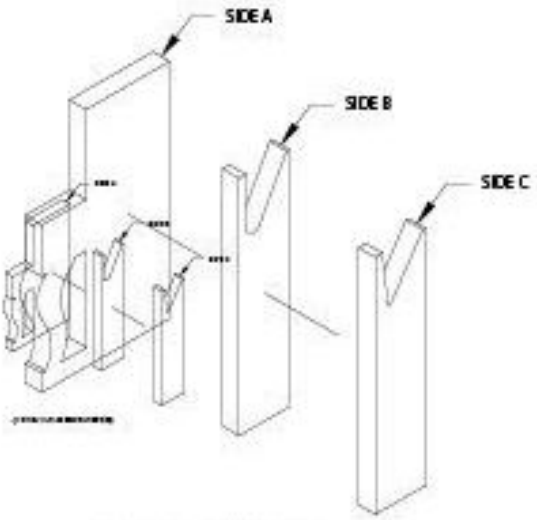
STEP 1: Attach the Side B piece to the Side A piece where shown. Attach the Side C piece to the Side B piece. Make one right-hand and one left-hand assembly.

STEP 2: Attach the Front A piece to the Front B piece. Attach the Front assembly and the Back piece to the Side assemblies. Attach the Base to the assembly in the position shown on the full size drawing of the Base piece.

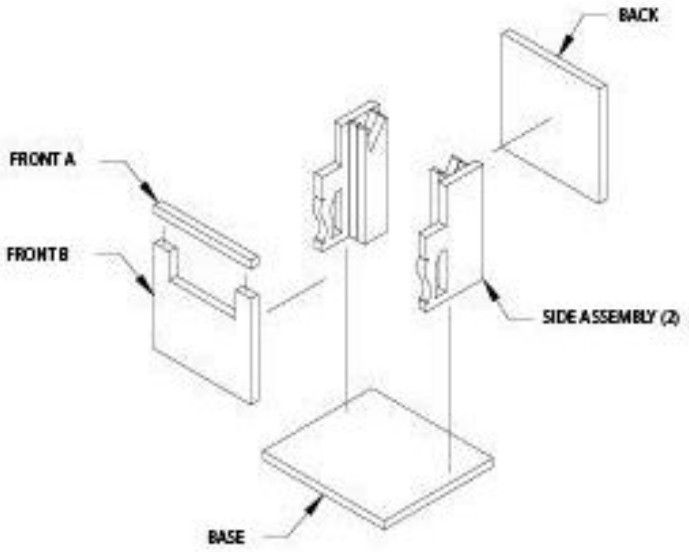
STEP 3: Attach the Pedal B piece to the Base and Front B piece where shown. Attach the Pedal A pieces to the Pedal B piece spaced ⅛" (3mm) apart. Attach the Keyboard B piece to the Side assemblies where shown. Attach the Keyboard A piece to the Keyboard B piece.

STEP 4: Attach the Top piece to the Back piece with the Hinges. Attach the Hinges approximately 2" (51mm) from the ends. Attach the Hook and Screw Eyes to the Top and Side assemblies to secure.

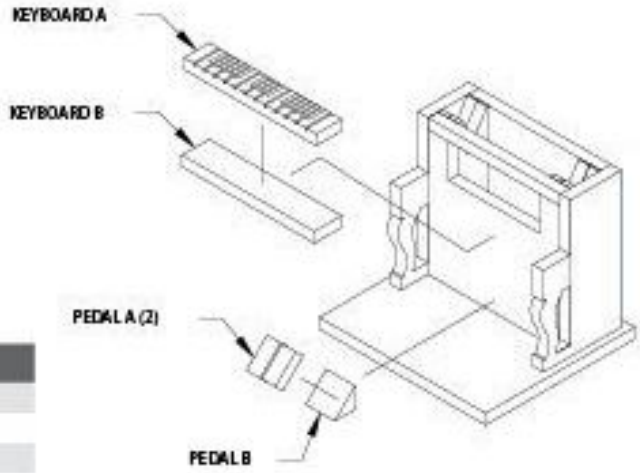
FINISHING: The main body of the project can be finished with Stain, Sanding Sealer, and Polyurethane. The piano keyboard is painted white with black keys. Paint lines for the areas to be painted black are provided on the drawing of the Keyboard A piece.



STEP #1



STEP #2



STEP #2

BILL OF MATERIALS

QTY.	PART	SIZE OF MATERIAL
2	Side A	¾" x 6" x 10" (19 x 152 x 254mm)
2	Side B	¾" x 2¼" x 10" (19 x 57 x 254mm)
2	Side C	¾" x 2¼" x 10" (19 x 57 x 254mm)
1	Front A	¾" x ¾" x 9¾" (19 x 19 x 248mm) (not shown)
1	Front B	¾" x 9¼" x 9¾" (19 x 235 x 248mm)
1	Back	¾" x 9¾" x 10" (19 x 248 x 254mm) (not drawn)
1	Base	¾" x 11" x 12¼" (19 x 279 x 311mm)
2	Pedal A	¾" x 1" x 2" (19 x 25 x 51mm) (not shown)
1	Pedal B	1½" x 1½" x 2¼" (38 x 38 x 54mm)
1	Keyboard A	¾" x 1¾" x 9¾" (19 x 48 x 248mm)
1	Keyboard B	¾" x 2" x 9¾" (19 x 51 x 248mm) (not shown)
1	Top	¾" x 4" x 11¼" (19 x 102 x 286mm) (not drawn)
2	Hinge w/ Screws	1½" (38mm)
2	Hook w/ Screw Eye	1½" (38mm)

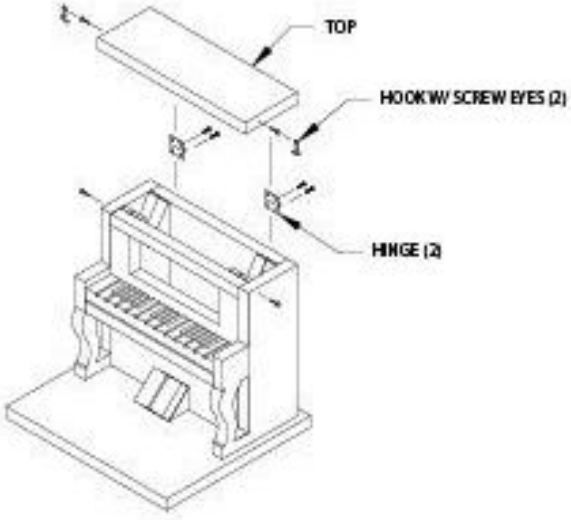
PAINT

Stain & Clear Finish for the piano body.

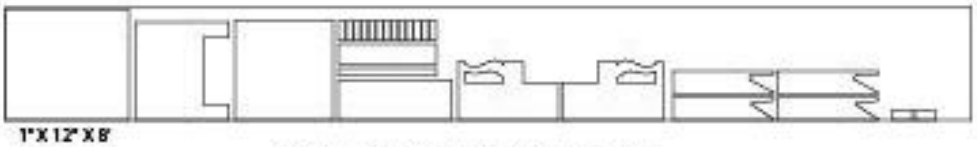
QTY.	GENERK COLOR
1	Stain, Sanding Sealer, Polyurethane

Stain & Clear Finish for the piano body.

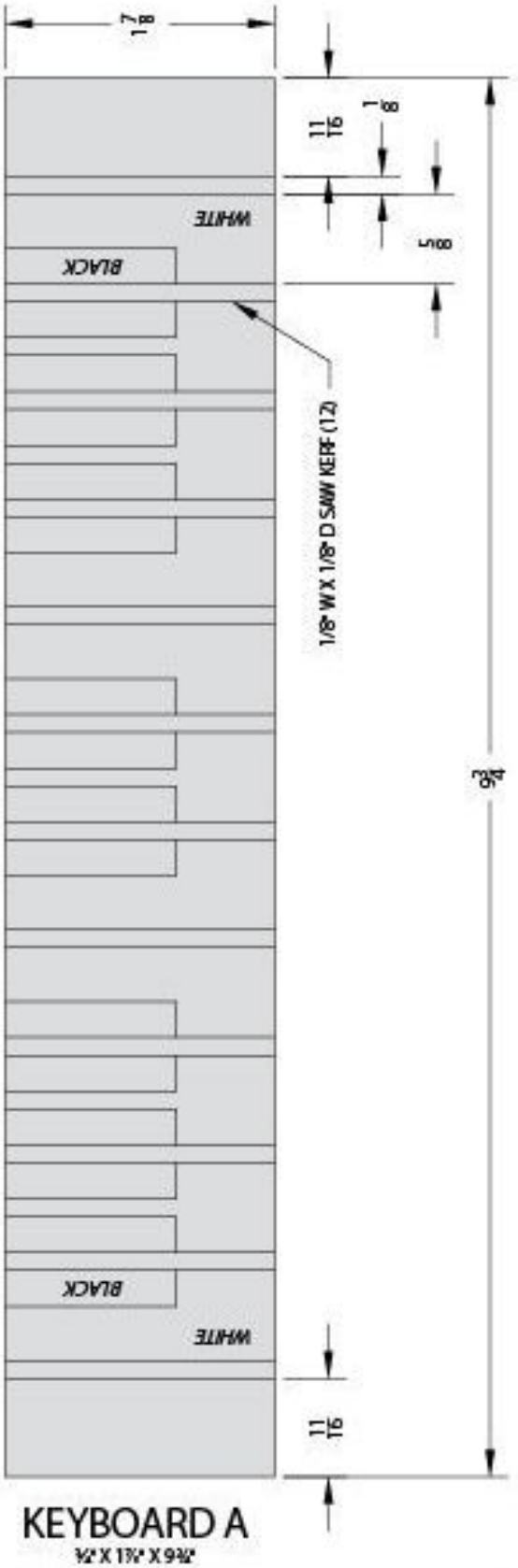
QTY.	GENERK COLOR
1	Stain, Sanding Sealer, Polyurethane



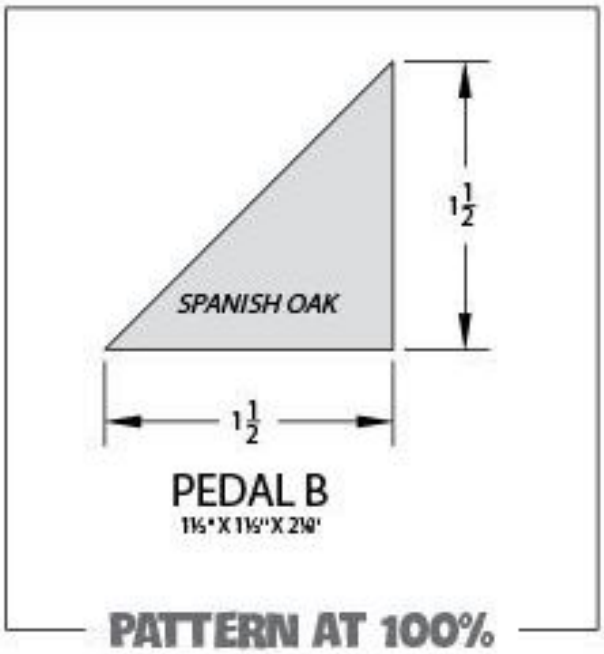
STEP #2



CUTTING DIAGRAM



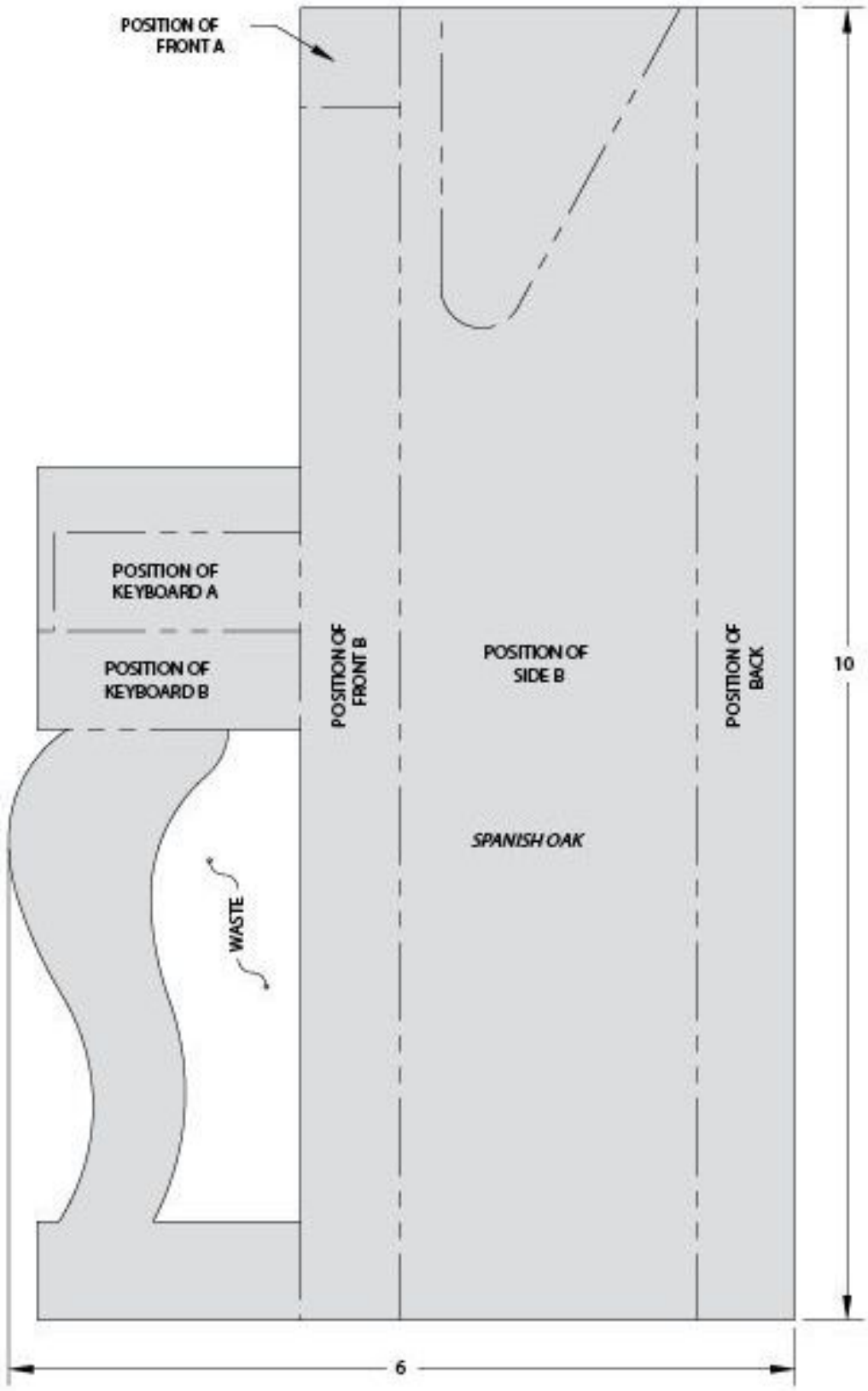
KEYBOARD A
½" X 1¾" X 9¾"



PEDAL B
1⅛" X 1½" X 2⅛"

PATTERN AT 100%

ENLARGE PATTERN 125%



SIDE A

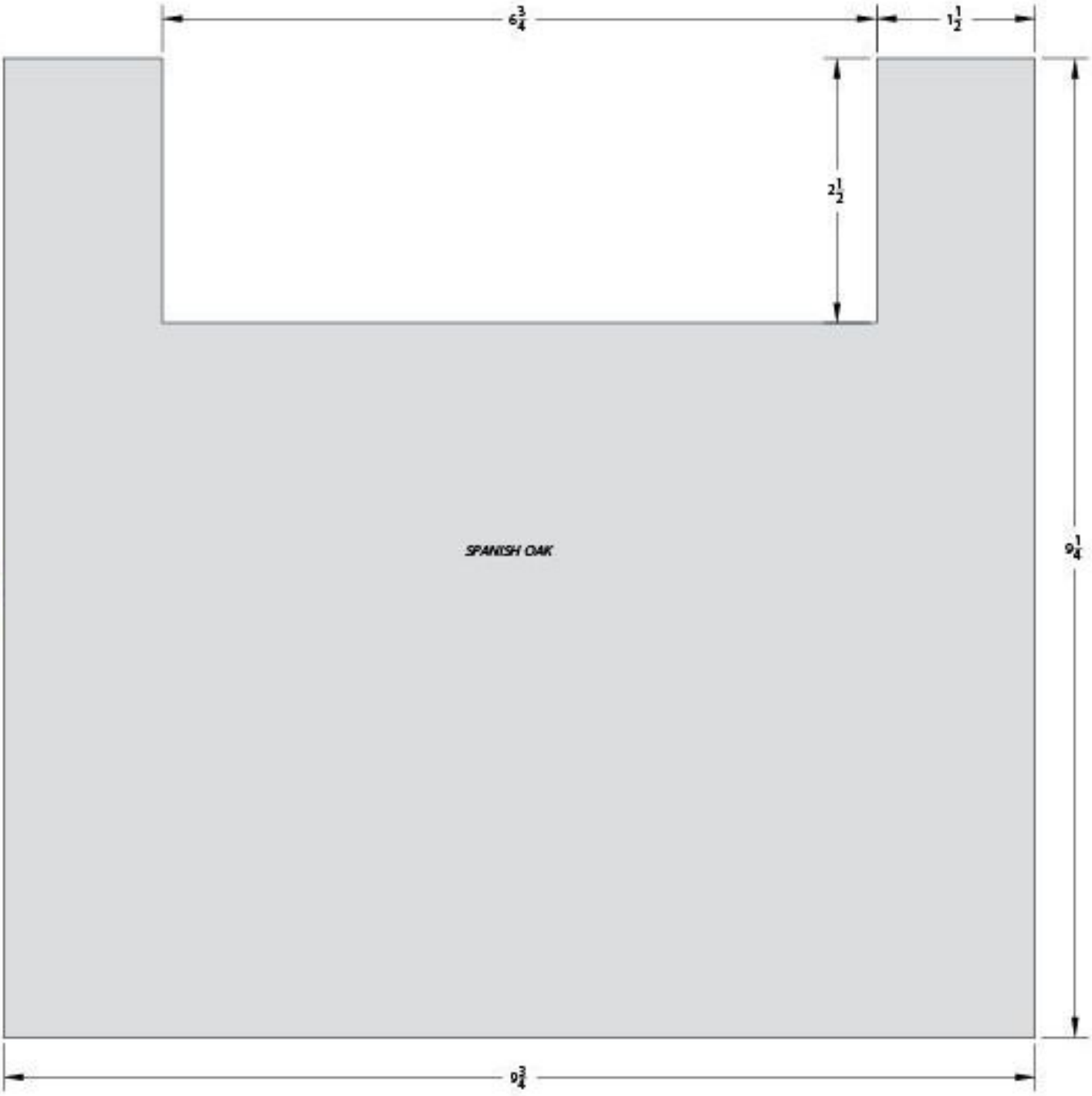
¾" X 6" X 10" (2 REQ'D)

ENLARGE PATTERN 125%

SIDE B
¾" X 2½" X 10" (2 REQ'D)

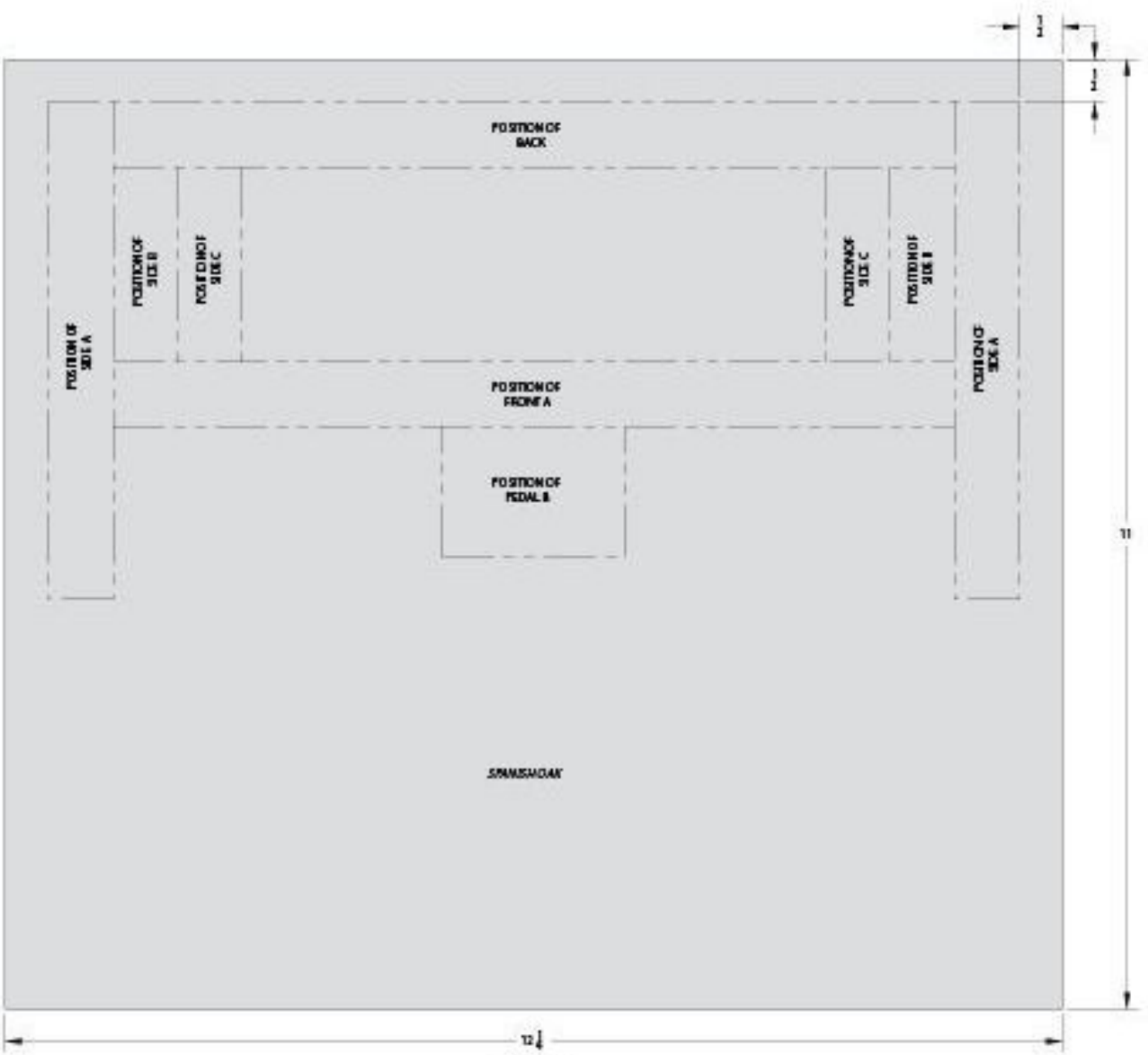
SIDE C
¾" X 2½" X 10" (2 REQ'D)

ENLARGE PATTERNS 125%



FRONT B
½" X 9½" X 9½"

ENLARGE PATTERN 140%



BASE

¾" X 11" X 12¼"

ENLARGE PATTERN 200%

IN CLOSING

Making and using a variety of different sizes of birdhouses and different styles of feeders is a great start in your goal of promoting the survival of wild bird populations. Learning which types of bird food are preferred by the birds that visit your feeder takes some experimentation, but your efforts will be rewarded over and over in entertainment value alone. Watching birds attend to their newborn fledglings and witnessing the first awkward flights as a new generation learns how to fly is most rewarding.

Take the responsibility to maintain your birdhouses and feeders. Be sure to place bird feeders in open areas where squirrels can't rob your seed, but close to bushes and appropriate cover. Trees and shrubs offer protection from ice, rain, snow, cold winter wind, or hot sun. Such shelter also helps prevent attack from hawks and other predators.

Besides food, water is essential for avian survival. Providing a bird bath should be an essential part of your overall effort. Birds need water for drinking as well as bathing. Bathing is helpful for parasite control but also helps with feather maintenance.

APPENDIX A

This Appendix is a source list for all specialty hardware and difficult-to-find supply items that are referenced throughout this book. Following the item description is the size and catalog order number. All parts can be ordered from Meisel Hardware Specialties. (See reference at bottom of page.)

DESCRIPTION	SIZE	MEISEL PART NO.
Acrylic Plastic	1/16" x 8" x 10"	#8784
Acrylic Plastic	5" x 7"	#8773
Chain & Eye Kit	12'	#3037
Forstner Bit	2-1/8"	#4811
Plastic Jar	1 Gallon	#4071
Flush Mount Hanger	1-1/2" x 1-3/4"	#1262
Hinge w/Screw	1-1/2"	#1276
Hook w/Screw Eye	1-1/2"	#1286
Delta Acrylic Craft Paints		
Paint, Burnt Sienna	2 oz.	#02030
Paint, Pumpkin Orange	2 oz.	#02042
Paint, Golden Brown	2 oz.	#02054
Paint, Christmas Green	2 oz.	#02068
Paint, Ocean Reef Blue	2 oz.	#02074
Paint, GP Purple	2 oz.	#02090
Paint, Light Purple	2 oz.	#02091
Paint, Flesh	2 oz.	#02126
Paint, Cape Cod	2 oz.	#02133
Paint, Fuchsia Pink	2 oz.	#02481
Paint, Lime Green	2 oz	#02489
Paint, White	2 oz.	#02505
Paint, Black	2 oz.	#02506
Paint, Red	2 oz.	#02507
Paint, Opaque Blue	2 oz.	#02508
Paint, Opaque Yellow	2 oz.	#02509
Paint, Gold	2 oz.	#02604
Clear Varnish, Exterior	8 oz.	#07003
Paint Marker, Black	Medium Line	#3247
Plastic Eye, Black	3/8"	#8627
Plastic Eye, Yellow	1/2"	#8866
Plastic Eye, Black	3/4"	#8630
Plastic Eye, Black	9/16"	#3437
Plastic Eye, Brown	9/16"	#9915
Plastic Eye, Green	1-7/16"	#9299
Plastic Plug	2-1/4"	#1279
Red Propeller	5-1/2"	#6005
Screw Eye	1-9/16"	#3290
Screws, Exterior	2# x #6	#1446
Skull & Crossbones Decal	2-1/4"	#8129
Squirrelmobile Decal, White		#1385

Available from Meisel Hardware Specialties. To request a catalog, write to Meisel Hardware Specialties, P.O. Box 70, Mound, MN 55364-0070 or call, 1-800-441-9870 or Visit Online, www.meiselhardware.com

APPENDIX B

For readers who would prefer not to enlarge patterns on a photocopier, full size pattern sheets can be ordered for each of the projects in this book. Order plans from Meisel Hardware pecialties 1-800-441-9870 or *www.meiselwoodhobby.com*. Be sure to use the part number below when placing your order.

BIRDHOUSES

PART	DESCRIPTION
#W2735	Cartoon Kid Birdhouses
#W3067	Bluebird Abode
#W3069	Bear (Creatures IV) Birdhouse
#W3152	Window Peeper Birdhouse
#W3247	Tree Frog Birdhouse
#W3329	Robin Residence Nesting Shelf
#W3499	Whimsical Birdhouse
#W3514	Beaver Birdhouse
#W3518	Roster Birdhouse

BIRD FEEDERS

PART	DESCRIPTION
#W3397	Cardinal (Pop Bottle) Bird Feeder
#W3420	Oriole Wishing Well
#W3466	Underside Suet Feeder
#W3471	Planter Bird Feeder
#W3515	Football Helmet Birdfeeder
#W3135	Bird Feeder Faces

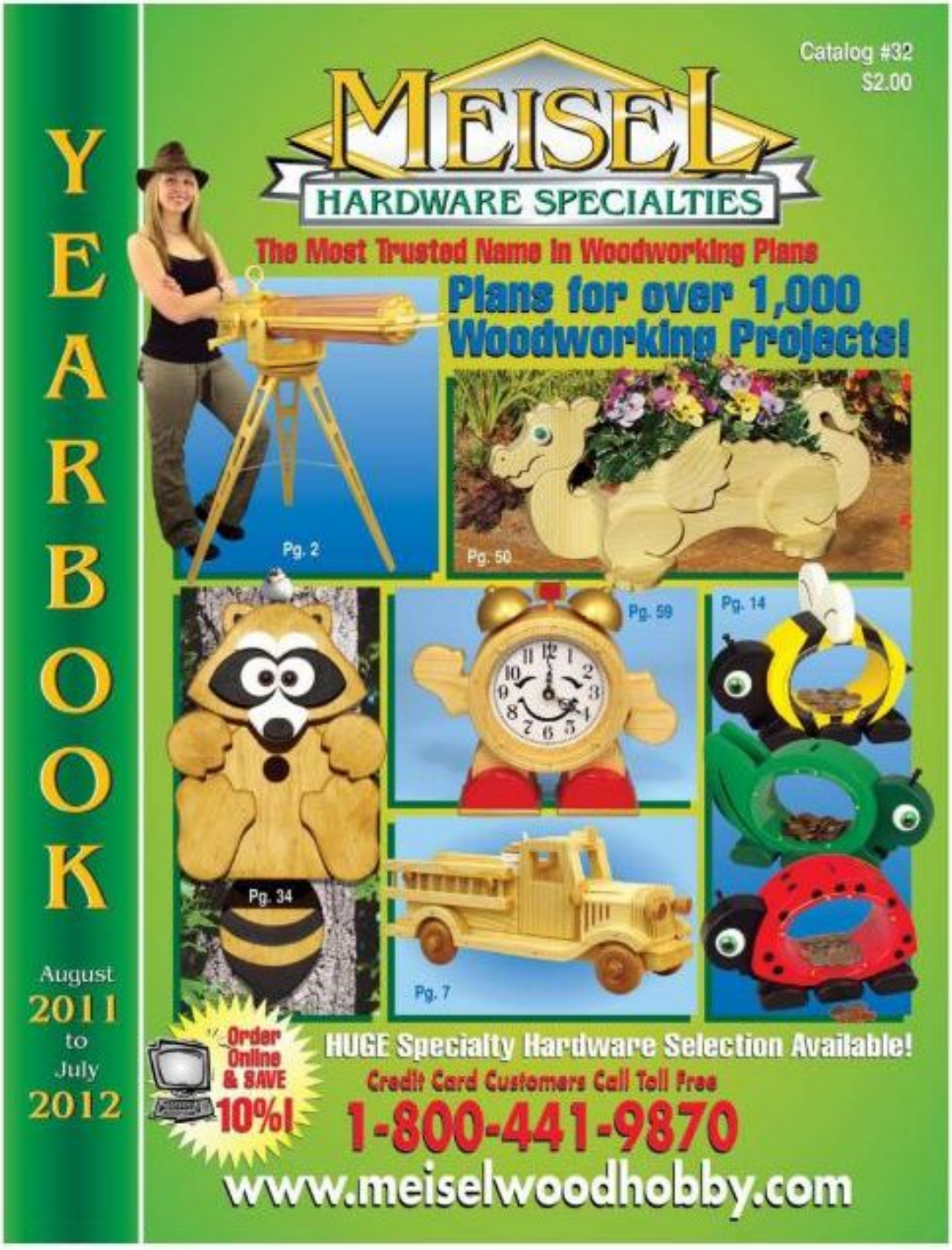
SQUIRREL FEEDERS

PART	DESCRIPTION
#W1657	"Squirrelmobile" Feeder
#W2751	Tractor Squirrel Feeder
#W3533	Player Piano Squirrel Feeder

APPENDIX C

APPROXIMATE NEST BOX DIMENSIONS

SPECIES	FLOOR SIZE (IN INCHES)	ENTRY-HOLE (IN INCHES)	HOLE ABOVE FLOOR (IN.)	DISTANCE FROM GROUND (FT.)
American Robin	5 x 8	Open sides	—	8 – 10
Bluebird	31/2 x 31/2	13/8 x 21/4	5 – 7	5 – 7
Chickadee	4 x 4	1 1/8	6 – 8	5 – 15
Finch	6 x 6	2	4 – 6	8 – 12
Flycatcher	6 x 6	13/4 – 2	6 – 8	5 – 15
Nuthatch	4 x 4	1 1/4	6 – 8	5 – 15
Phoebe	5 x 8	open sides	—	8 – 12
Sparrow	5 x 5	1 1/2	4 – 8	4 – 12
Barn Swallow	5 x 5	open sides	—	8 – 12
Tree Swallow	5 x 5	1 1/2	2 – 5	10 – 15
Titmouse	4 x 4	1¼"	6 – 8	6 – 15
Warbler	4 x 4	1 1/2	5	4 – 7
Wren	4 x 4	1- 1 1/4	3 – 6	6 – 10



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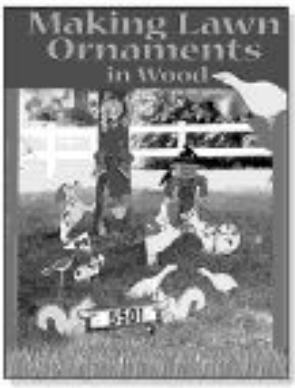

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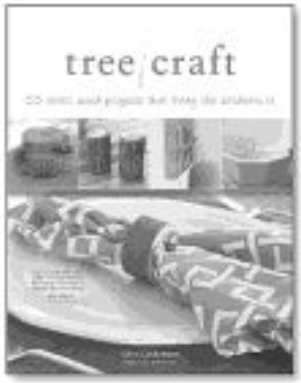

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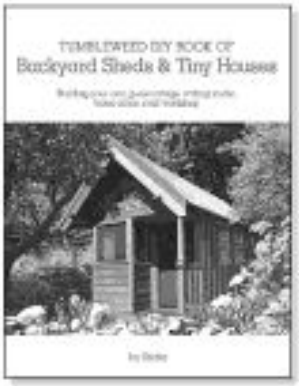

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