Bentwood Birdhouse

by **rabbitcreek** on January 4, 2009

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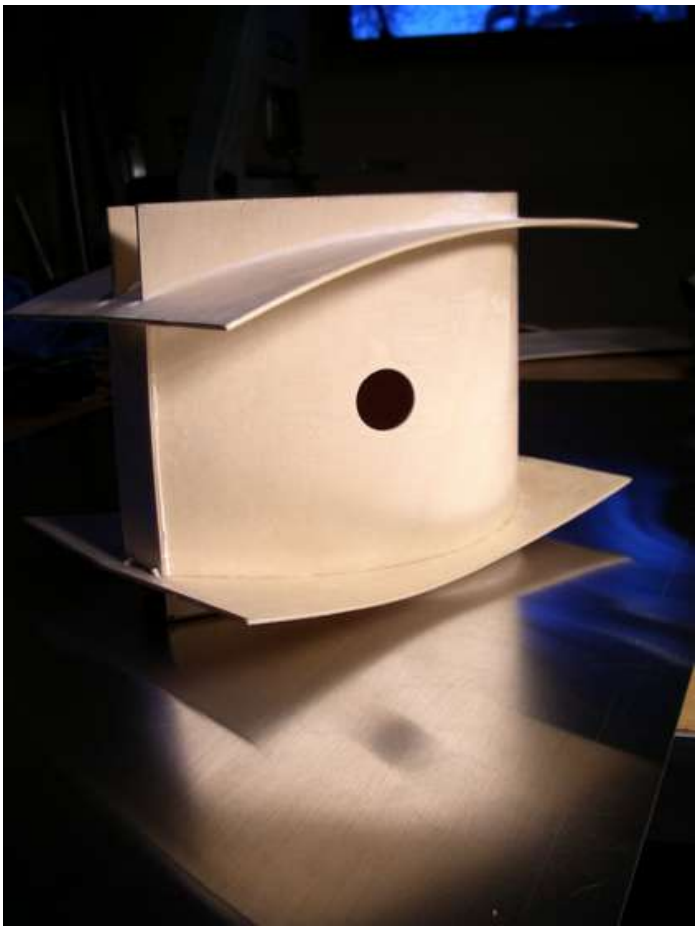
Intro: Bentwood Birdhouse

Building birdhouses is one of those classic things to do with your hands. We are first exposed to the process in high school wood class. Frustrating moments with poorly fitting plywood and nails usually end any interest in the project. This is a new twist on the design for these usually dull construction projects that will actually look good on the outside of your house this summer and involves fun construction techniques uncommon for this type of project.

The process uses bendable poplar wood plywood that is made in Italy and is available at most specialty wood shops assembled in a composite epoxy-coated structure that is light, waterproof and elegant.

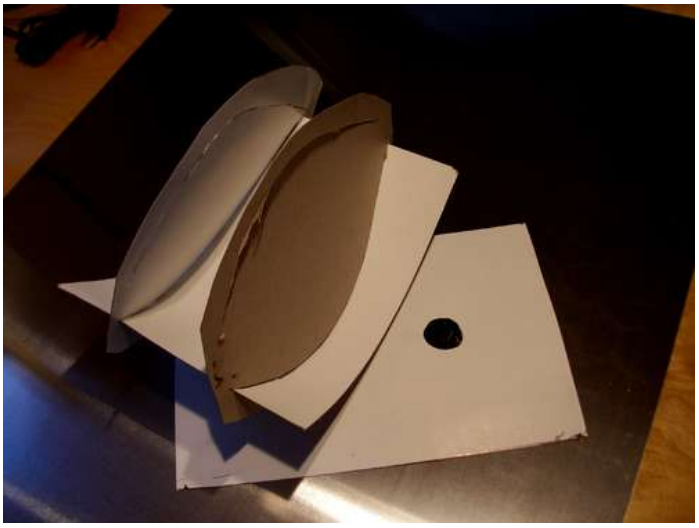


Step 1: Gather Materials

Bendable Poplar plywood 4x8 sheet--about $35
West System 105-B Epoxy Resin 32 ounces
West System 206-B Slow Hardener 27 ounces
Foam brushes
Craftsman or RotoZip Cutter tool with 1/8 " rotary blade for wood
Razor blade knife with utility blade
Shirt cardboard 4 pieces 8"x12"
Elmers Carpenters wood filler--interior/exterior
Hot glue gun
Sandpaper or sanding block
Bits: 1/4" 1 1/2"
Clamps

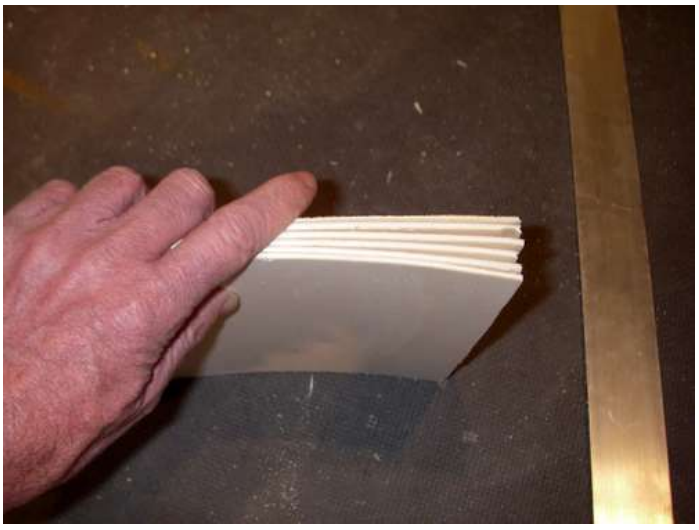
Step 2: Modeling the Birdhouse

This birdhouse design is a simple arrangement of four pieces of 8"x12" bendable poplar plywood. I began with a model of the construction made up of 4 pieces of shirt cardboard--a construction material that I remember fondly from my childhood. These are still available from your shirts if you have them boxed and laundered otherwise you can cut them out of "store bought" cardboard. The roof and the floor consist of identical cut designs that hold the curved sides in place. The curved cuts in the cardboard model should be centered mirror images of each other and should not extend further than 1/2" from the edges of the cardboard. The type of curve you draw and model are up to you but the curve must be long enough to accomodate the length of the side pieces. In the model you can cut the slits with a razor-knife in the poplar you will be cutting the slits with a 1/8" rotozip bit that will allow the plywood to slip in.



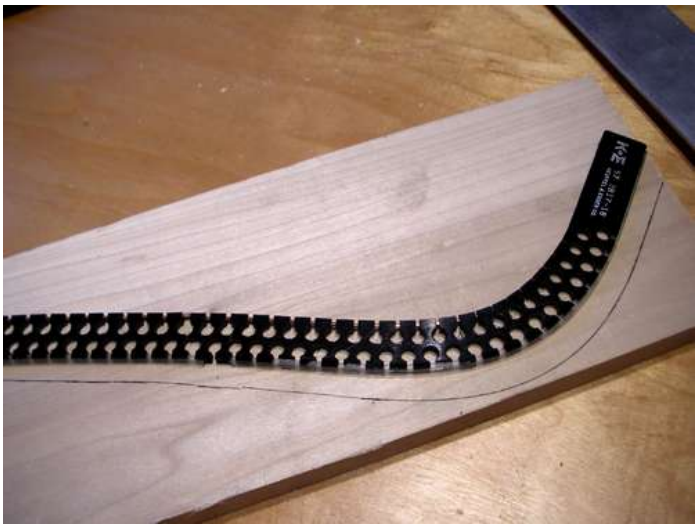
Step 3: Cutting the Pieces

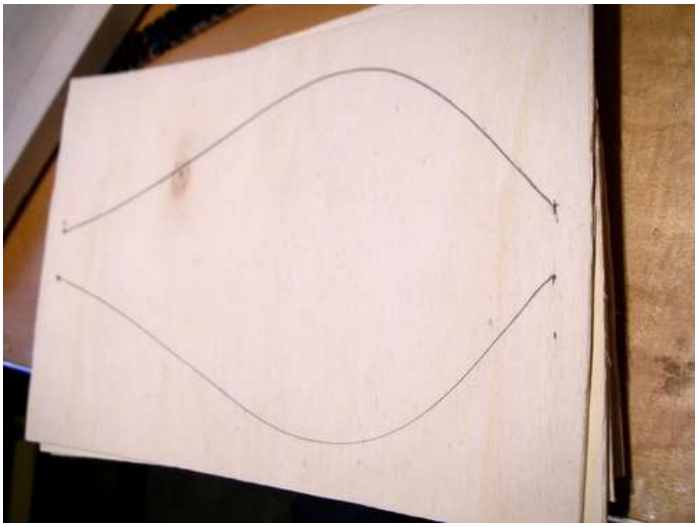
There is a natural curve to the panel of plywood and the four identical pieces of poplar plywood required in each birdhouse all should curve in their long dimension. The 8" x12" pieces can be easily marked out on the large sheet so that you should get 6 pieces out of the 48" side of the sheet. The plywood is easily cut with a straightedge and a razor knife.



Step 4: Drawing the Cuts

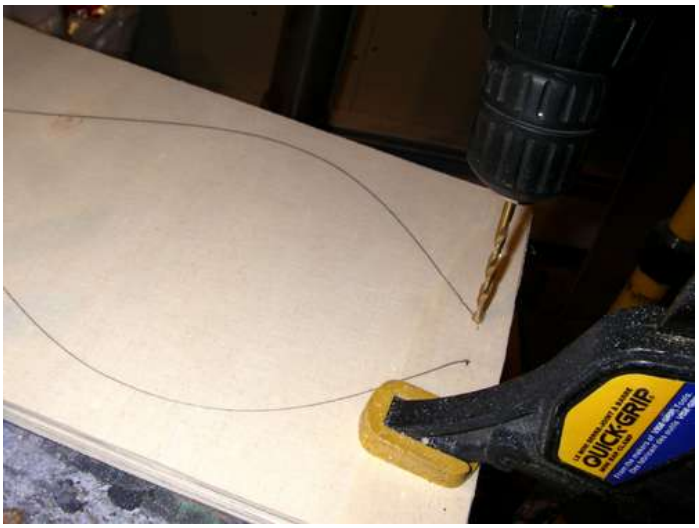
The inspiration for the design of the birdhouse came from a wing shape that I had in my mind. I used a curve tool to get the shape I wanted and cut a piece of wood to use in tracing the line on the poplar plywood pieces. The lines were drawn so that they stopped 1/2" from the ends of the plywood and were mirrored across the long axis of the piece staying an inch away at the ends. Other similar cuts can work and you can experiment with the design. Both the roof and the floor piece are drawn out in the exact same way.





Step 5: Cutting the Groove

I usually cut both marked top and bottom at one time--if building multiple houses you can cut four of these sheets at one time. It is best to clamp the sheets securely before cutting. I drill start and stop holes at the end of each line with a 1/4" bit and then proceed to cut out the long channels with the rotozip or craftsman equivalent rotary drill with the 1/8" bit. This will form the tight slot that will hold the wall pieces in place. It takes a little practice to get a smooth cut but with moving slowly the line will be quite steady. This is an amazing piece of technology and useful for a lot of other projects.


QUICK GRIP


ROTO ZIP
QUICK GRIP


ZIP

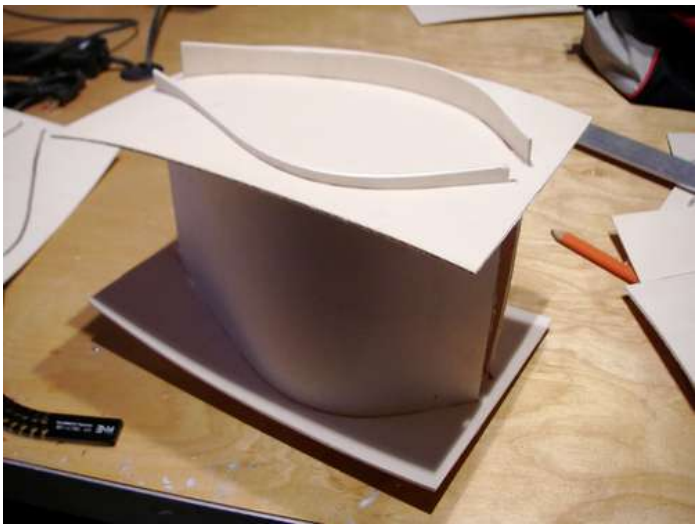

ROTO ZIP

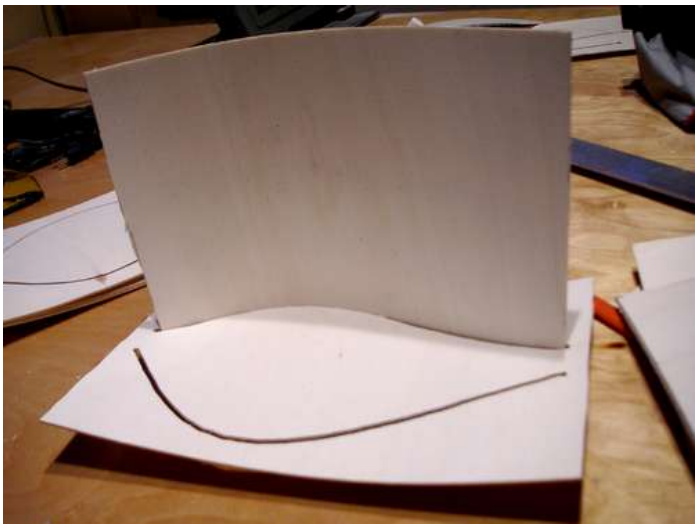
Step 6: Cut the Bird Hole

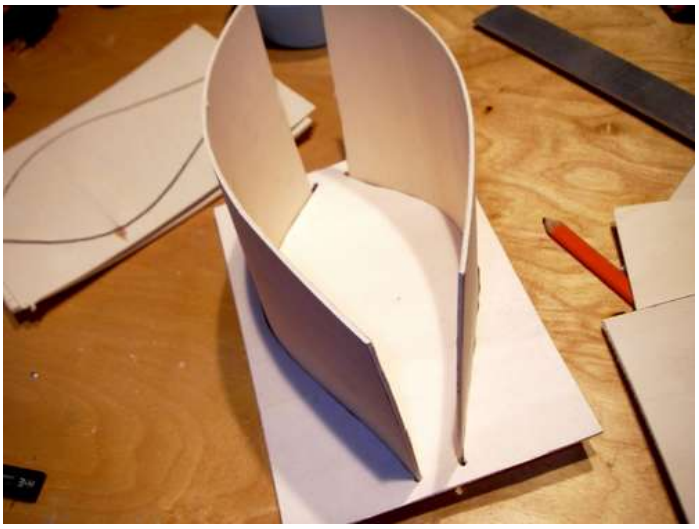
I used a 1 1/2" bit to cut this--the literature varies on this dimension and I wont get into it. The hole should be cut about half way up the side in the portion which curves the least--you don't want to press your luck when you are bending this stuff--holes definitely weaken it. Only one of the side pieces gets a hole!

Step 7: Assembly

The fun part. This takes a little goofing with but with a bit of gentle bending you can get all the pieces together. Get the top or bottom on first and then move it down on the pieces to stabilize it before putting on the opposite one. After getting it roughly together carefully adjust the top and bottom to match the wing shaped curves of the sides.

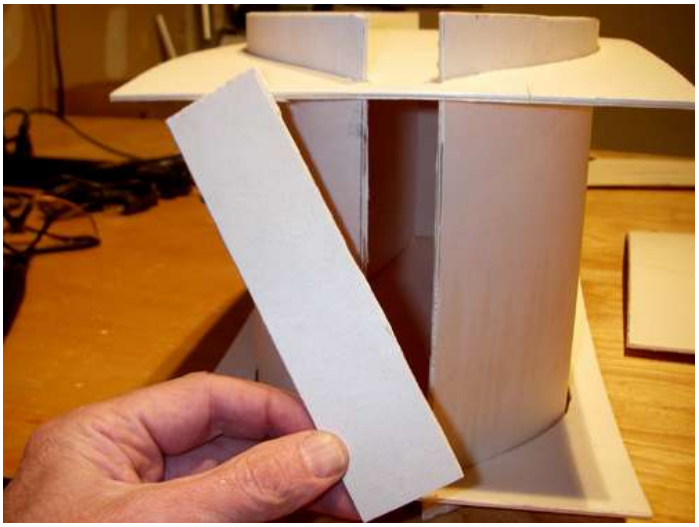


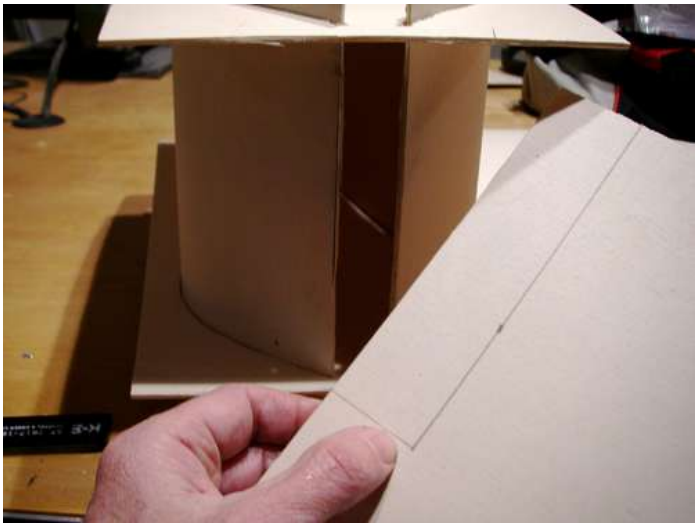




Step 8: Sealing it Up

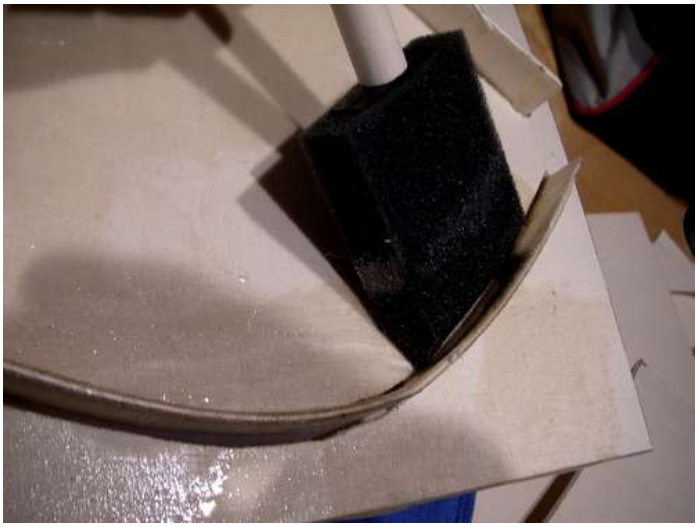
Measure the openings on the two ends and cut side pieces to fit in these spaces out of the poplar plywood. The structure can be temporarily tacked together with a few dots of hot glue. The side and the top are self-tensioning and usually don't require this--only the end pieces.





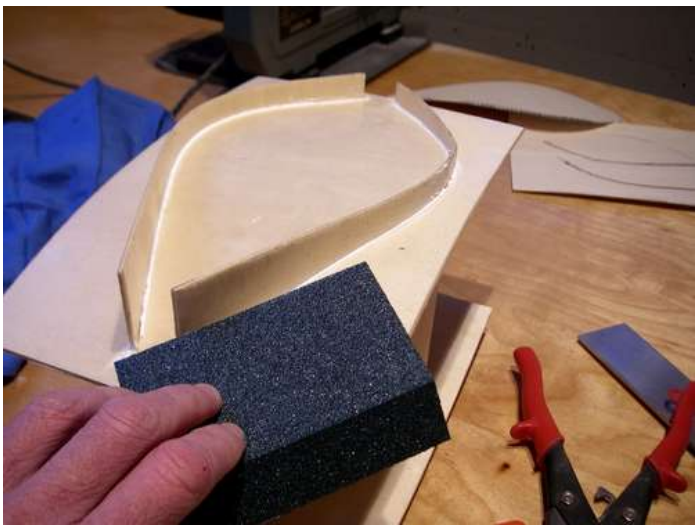
Step 9: Epoxy Coating

The West System is very nice. It usually includes the self measuring pumps attached to the hardener and the epoxy. If you haven't used epoxy systems before you should read up on safety rules that come with the stuff. It is really easy to use and it takes about six pumps of each one to make a large enough batch to coat the whole structure. You use a sponge brush to mix the two components and to apply it to the structure. Not only does it glue the whole thing together into a composite structure it also forms a weather barrier to keep it going for many summers to come. Make sure you treat the end cuts of all the plywood. The stuff hardens overnight and this is the slow stuff so you have at least 20 minutes to put it on. Make sure you get the stuff into the cracks to glue and seal them. Only one coat of epoxy is necessary to seal and glue the structure. Wear latex gloves for this step.



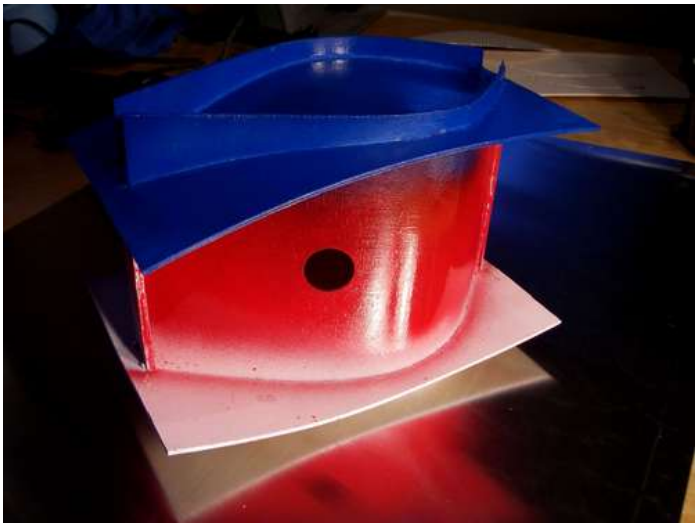
Step 10: Sealing and Sanding

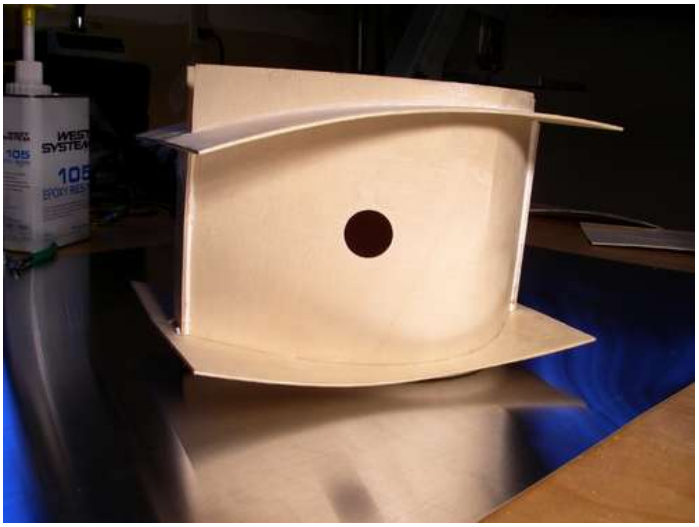
There will be some openings in the structure once the epoxy dries. Seal these with some wood filler of the appropriate color. The structure can then be sanded to smooth out the small defects that occur when applying epoxy for the first or fortieth time. The final structure can then be left a natural color by applying a polyurethane finish or an appropriate outdoor paint.



Step 11: Ready for the Birds

You may want to modify the design to make one of the small end panels come off for cleaning between residents. You can also cut the square edges off with your rotary cutter tool. These structures are very fun to make and modeling them with cardboard can get you a neat lunchbox or a variety of other bendable composite creations.





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Comments

29 comments **Add Comment**

woodNfish says: Apr 11, 2010. 1:35 PM **REPLY**

This a very cool "Googie" birdhouse. A couple of ventilation holes would be a good idea, other than that I wouldn't change it at all. I am certain all the hip and cool birds will want to live in your birdhouse.

Don't worry about predators. Most parent birds will try to drive them away or draw them away by acting injured. Nature is tough, but that is how the animals live, including us.

I do have one suggestion to make the fabrication a bit easier - that template board you made, just use it as a cutting guide for your roto-zip. Clamp it down and run the base of the tool along it to get a nice smooth cut. That would be much easier than trying to freehand a line with one of those tools. They are not easy to control freehand.

Nice job!

BTW if want to know what Googie is, google it. Very cool!

h3idi says: Aug 12, 2010. 6:49 AM **REPLY**

Nice. Googie = Jetson architecture. :)

woodNfish says: Aug 13, 2010. 3:31 PM **REPLY**

Well yes, although it is really Jetson architecture = Googie architecture. You can also see some excellent examples of Googie architecture and design in The Incredibles.

bailey15 says: Jun 22, 2010. 7:30 AM **REPLY**

very cool build, i enjoyed it.

mikeh3k says: Apr 11, 2010. 9:24 AM **REPLY**

Whats really nice about all of this is the fact that (1) a "maker" has shared with us a great design and (2) "followers" can comment on needed design changes to complete the project, making it safe for our feathered friends.

I plan on using the design incorporating the suggested modifications. Thanks to all
Mike Henrichs

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gdelisle says: Jun 17, 2009. 11:54 AM **REPLY**

Unfortunately, this bird house should never be used to house actual birds! The epoxy sealing prevents the house from having proper ventilation, and that will cook your birds (or at the very least, their eggs) on a hot day. Furthermore, every bird house needs drainage to release condensation and waste produced by the birds inside, and every bird house needs a way for you to open it and clean out the trash at the end of the season. This is a lovely decoration and sounds like a fun project, just keep it far away from actual birds!

Bright Shadow says: Jun 21, 2009. 7:26 PM **REPLY**

You could drill a couple of holes for ventilation, right?

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gdelisle says: Jun 22, 2009. 7:16 AM **REPLY**

Yes. A couple of half inch diameter holes somewhere in the upper part of the sidewall would do it. You don't want them in the roof, because rain will get in, but you don't want them where they'll get blocked by nesting material. But I'll echo what hands_on_man says as well, this box isn't predator-resistant. This box is meant for form, not function.

Elkhound says: Jan 21, 2009. 9:11 PM **REPLY**

This is an outstanding bird house. The multiple curves make the light weight design incredibly stout, translating into security for the tender residents inside. The spaciousness allows for considerable nesting and insulating material. I share this craftsman's interest in West System epoxy. It has been used in many of my projects during the past two decades. The pumps are just as accurate in dispensing the resin and hardener as they are represented to be.

Marcos says: Jan 21, 2009. 12:14 PM **REPLY**

It's nice looking, but... I agree with hands_on_man, that ledge on the bottom is a problem. Assuming, of course, that you actually want birds to live in this thing, rather than have in sitting on a shelf in your own house. Yep, it happens, many birdhouses are never intended to birds, but for "interior decorating." Also, most of the bird house reading I've done indicates that there -must- be some ventilation in a birdhouse. If not, the birds can get cooked inside of it! It doesn't hurt to have a drain hole or two in the bottom as well. The size and location of the entry hole (good for you for not adding a perch, which encourages predators) are important. It matters to particular bird species how large and how high the holes are. Finally, the location of the house itself is also critical, to avoid predators, and stay out of direct sunlight. I find bird -feeders- far less complicated. ;-) Someday, I'll have my low-waste design on the market. If anyone has connections in sheet metal fabrication production, and/or distribution of products, please let me know.

harry5150 says: Jan 11, 2009. 11:32 AM **REPLY**

Very smooth. What kind of curve tool is that?

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rabbitcreek says: Jan 12, 2009. 12:14 PM **REPLY**

My wife bought it for me years ago--I looked it up and it's called a draftsman spline. Great for drawing smooth curves.

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negrunt says: Jan 12, 2009. 10:50 AM **REPLY**

nice!

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hands_on_man says: Jan 10, 2009. 8:25 PM **REPLY**

just a by the way, this birdhouse is going to kill birds. Because of the bottom step, bigger birds, can sit and wait for the younger hatch lings/birds to poke their heads and, and get gobbled right up. i love your birdhouse design, besides that.

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debbieworth says: Jan 9, 2009. 10:47 PM **REPLY**

Modern and elegant. Oh, it's for the birds! :)

fwjs28 says: Jan 9, 2009. 1:31 PM **REPLY**

if only i were smaller.....*dreams up cool shrink ray*.....sigh...

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mikekinard says: Jan 9, 2009. 12:11 PM **REPLY**

wicked cool

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loladawn says: Jan 9, 2009. 7:30 AM **REPLY**
this is incredible. How smooth. Could it be made into a sauna (for humans, not birds)? Love it.

duck-lemon says: Jan 6, 2009. 3:42 PM **REPLY**
Elegant, Smooth..... Awesome!

radiorental says: Jan 6, 2009. 8:11 AM **REPLY**
awesome instructable - thanks for posting /pauric

latouche says: Jan 6, 2009. 7:26 AM **REPLY**
If I could sell my current house, I would move in.

SeanS says: Jan 6, 2009. 3:27 AM **REPLY**
Danish modern but for the birds

bentwood says: Jan 6, 2009. 1:55 AM **REPLY**
what a sweet design!! Great Job!!

jschaaf says: Jan 5, 2009. 9:56 PM **REPLY**
elegant

sitka1867 says: Jan 5, 2009. 7:47 PM **REPLY**
Frank Gehery would be proud but would substitute a titanium skin.

dchamber says: Jan 5, 2009. 10:38 AM **REPLY**
if Franklloyd Wright were a bird he would land in this house!

fungus amungus says: Jan 5, 2009. 9:02 AM **REPLY**
Nice!

technoplastique says: Jan 5, 2009. 1:45 AM **REPLY**
It's such a lovely shape. I love working with epoxy - so many possibilities...

gmjhowe says: Jan 5, 2009. 1:20 AM **REPLY**
A very simple design, that works perfectly. Great work!