

# Turned Functional Birdhouse

## April 2017

In 2006 an article by Andy Barnum from Woodturning Magazine No 3 Spring 1991 in a book titled Useful Woodturning Projects inspired me to create my first turned functional birdhouse. My sister Jane had purchased one for us when we bought our cottage on Lake Erie in 2002 and I think that influenced me as well. I also did some Internet searching. Al Hockenbery suggested a body made from 9 staves was relatively simple with each stave having side angles of 20 degrees. Over the years I have demonstrated the making of them to our Golden Horseshoe Woodturner's Guild and other clubs. This is an attempt to simplify the roof construction so that more may participate in making them.

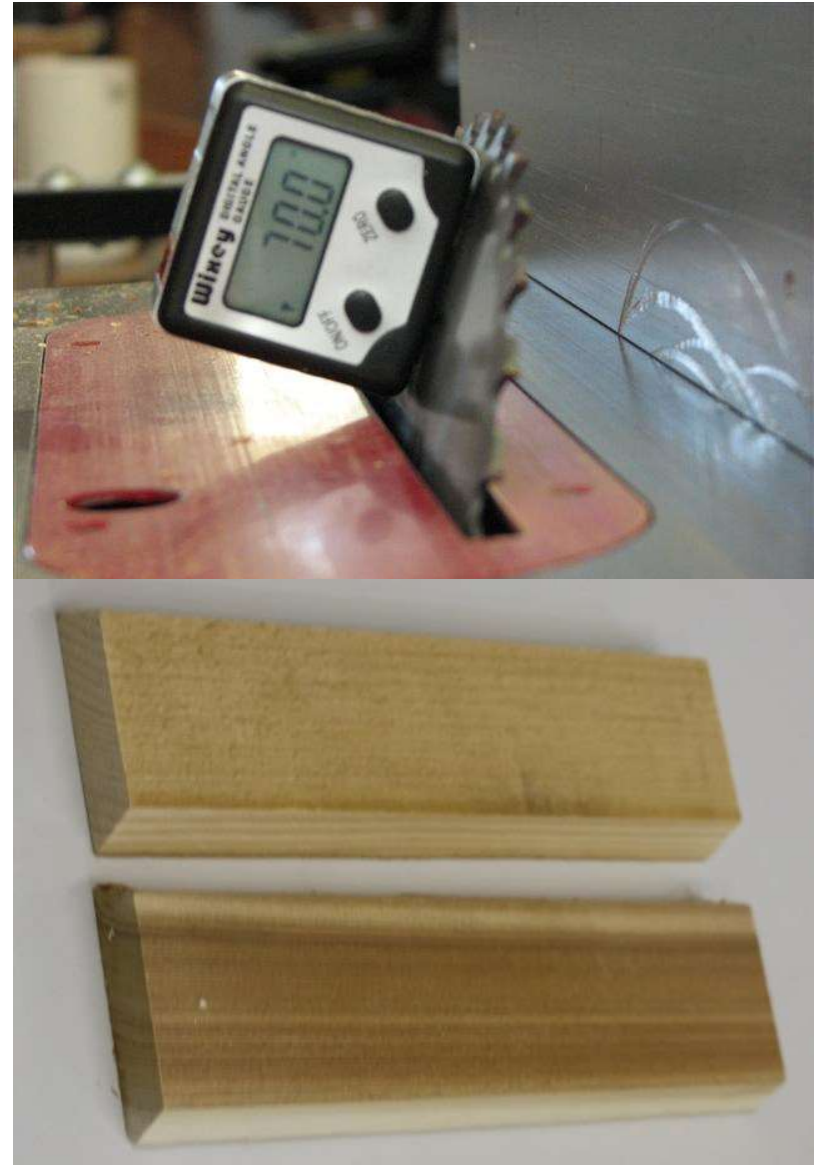
# Turned Bird House with Simple Layered Roof Design

- Constructed with staved body, Roof made from layered glue-up of 2x6 and 2x4 pieces.
- Bottom from glue-up 2x4 pieces, finials from cut-offs.
- Body 6" dia. X 7" H
- Overall ~ 14" H
- Dimensions not rigid
- A fun project that can be done on a Midi Lathe.
- Great Craft Show item in Spring



# Body Staves

- 9 staves cut at 20°, Cedar, pine, spruce etc.
- Each stave 2 ¼" W (Outside edge) x 7"L x ~¾" thickness .
- Drill Entrance hole for one stave prior to assembly, Wrens – 1 ¼" Entry Hole
- Drill ¼" hole for perch if desired. Have had nesting success with & without perch.



# Pocket Hole Fastening for Roof



More will follow on constructing and fastening the roof, but if you happen to have a Pocket Hole Jig like the Kreg Jig, this step needs to be carried out prior to gluing the body staves together. With the Kreg, the collar on the drill needs to be adjusted so that only about  $\frac{1}{2}$ " of the screw will protrude from the top of the stave and into the roof. Drill pocket holes in three or four of the staves. Watch during assembly that holes are at top of stave when gluing. Makes a very convenient way to fasten roof.

# Clamp staves with Band Clamp

- Using waterproof PVA glue and clamp fashioned from two sets of 2 Poly tubing clamps joined together.

Tridon 52/76 mm or

Murray Gold Seal #48  
3 ½" - 2 9/16"

- I have used Titebond II & Gorilla PVA.



Hole is about 2 ½" from top of stave

# End Plates for Turning Body

Prepare between centers two endplates from 2x8 Spruce with about a 4  $\frac{3}{4}$ " tenon to fit inside diameter of the body . Test fit on body. Snug fit is best, but do not force on the tenon. Tenon on headstock end for chuck and use tailstock on right end to secure between centers. Could be secured between centers without a chuck.



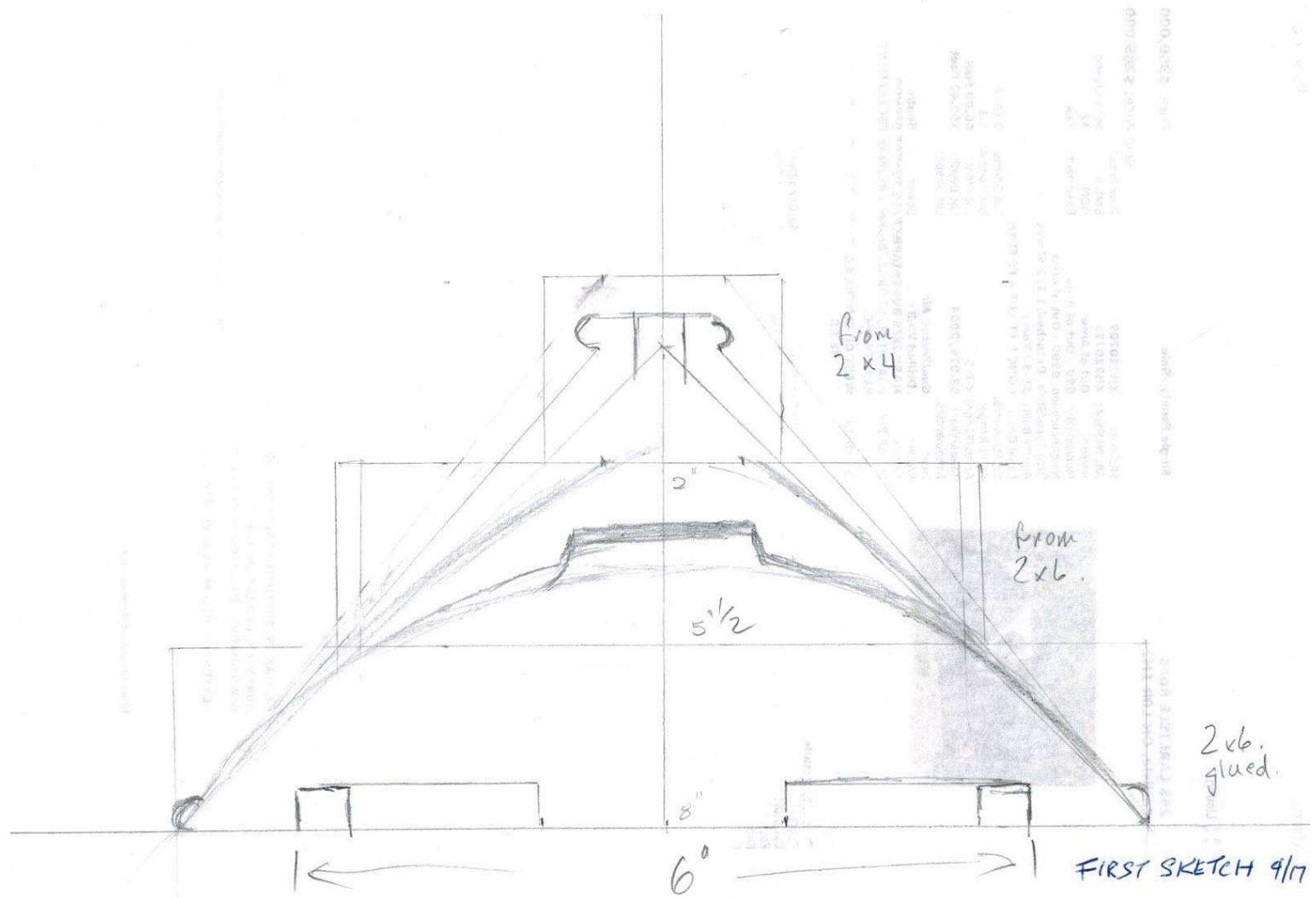


# Turn Body Between Centers

- Round using either a spindle roughing gouge, spindle gouge, bowl gouge or skew. Skew will give best finish but SRG is easiest and adequate. Leave rough finish.
- If desired, add a bead at bottom edge of body or elsewhere
- Chamfer not necessary with this roof design.

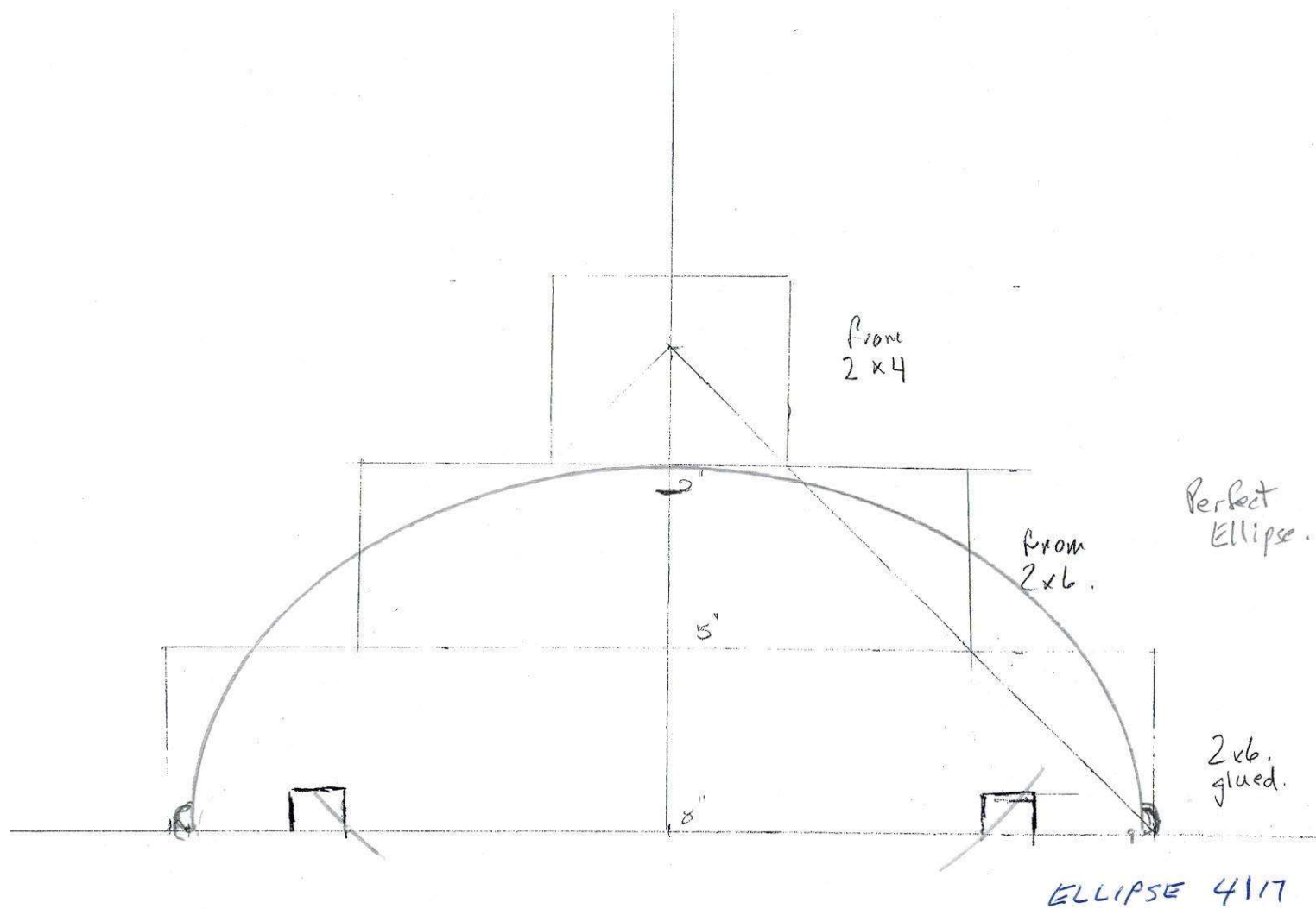


# First Sketch new Roof design

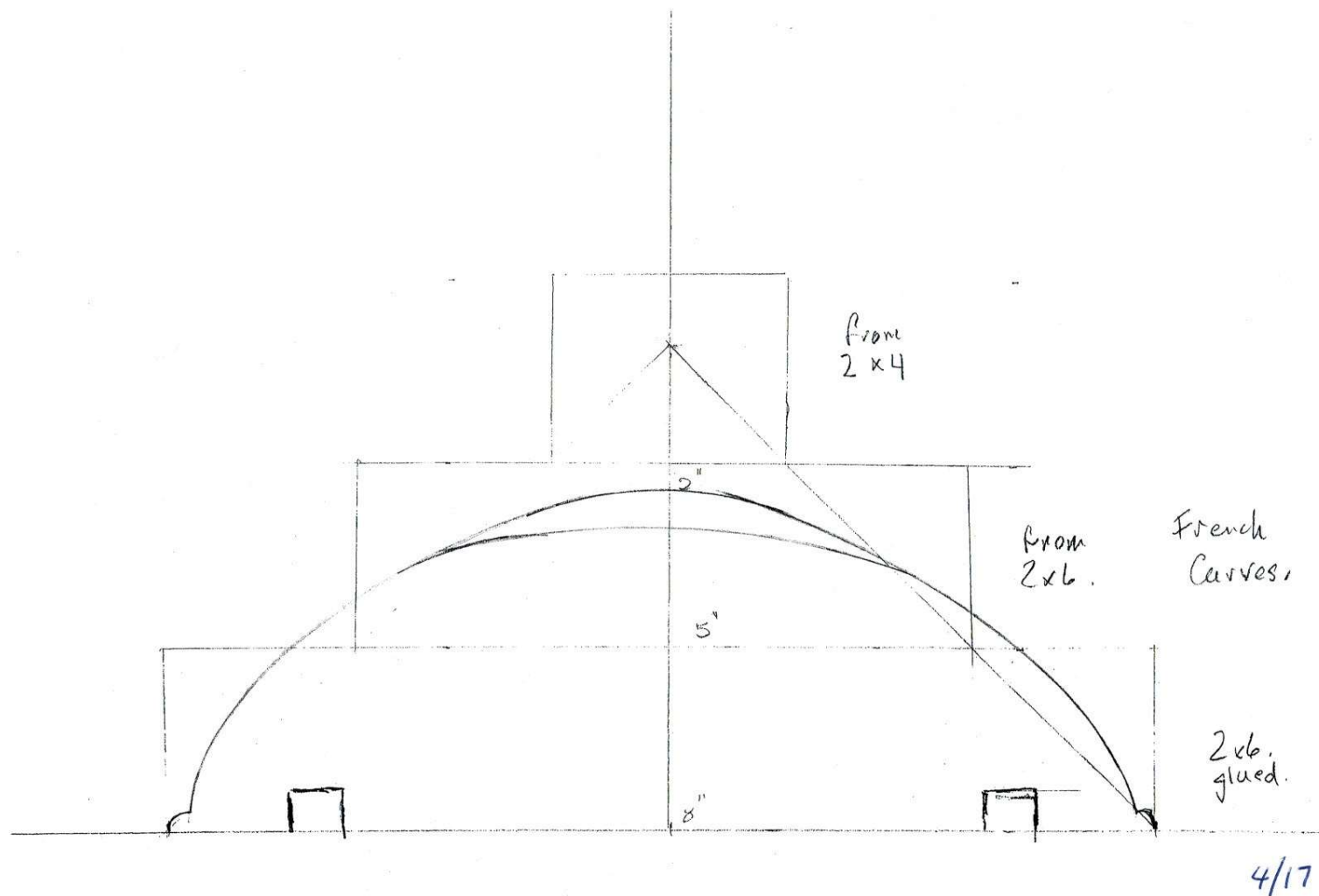




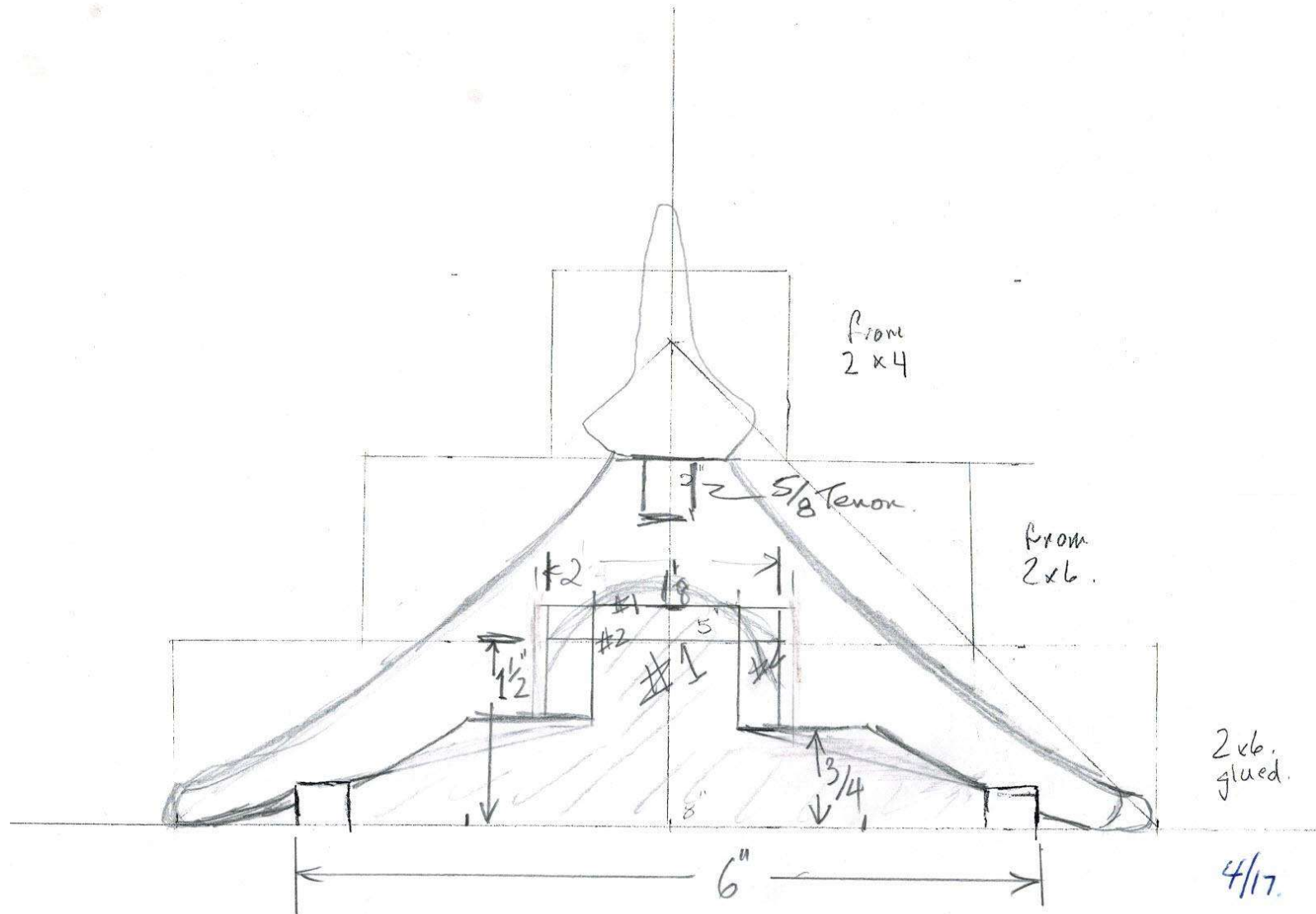
# Dome Sketch using an Ellipse



# Dome Roof using French Curves



# Final Working Sketch



## Make a strong support Faceplate 8" Diameter



Drill a 2" shallow hole with Forstner bit in double layer plywood and mount a turned piece of hardwood with tenon on each side. Epoxy in place and true up. Makes a quick reference for roof diameter.

# Glue Up for Roof from Cedar, Spruce, Pine etc.



Larger piece 8" diameter from a glue up of 2x6 + 2x4, smaller piece from 2x6 or 2 pcs 2x4. Joint edges for good glue joint and run through planer for a couple of light cuts to top and bottom surface as needed.

## First step turning Roof



Held against backer faceplate, true up circumference and do some preliminary shaping using bowl gouge and turn suitably sized  $\frac{3}{8}$ " –  $\frac{7}{16}$ " long tenon to mount in chuck jaws. Do not bottom in chuck jaws.

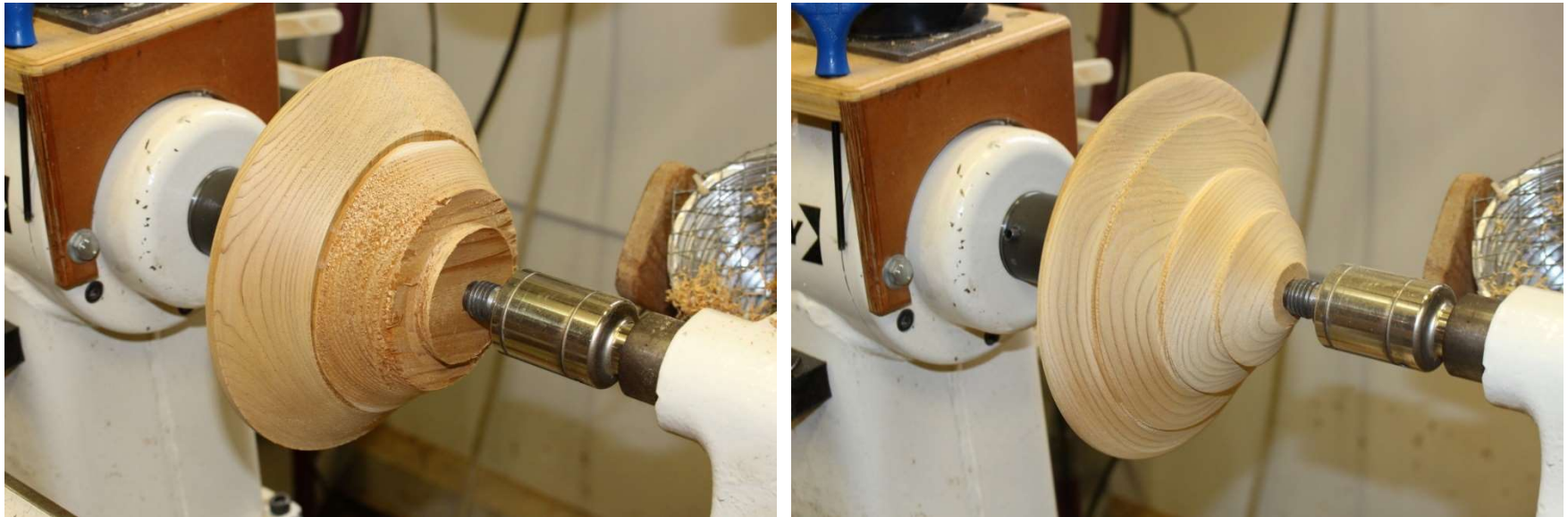


# Second Step Turning Roof



1. Mount in chuck with tenon from Step 1 and use moderate tool pressure.
2. With a pencil and work rotating slowly using center as a reference mark outside diameter of the body the roof will mount on, usually ~6".
3. Drill 2" hole 1 ½" deep with Forstner drill. Depth is for Oneway Talon chuck and may require adjustment for other chucks. Depth must allow key to be inserted in chuck when mounted.
4. Leaving about a ½" wide seating area, turn a dado about 3/8" – ½" deep and then a shallow concave depression leaving ½" deep x 2" hole to mount on chuck jaws.

## Reverse mount and turn final roof design



Mount on chuck jaws in expansion mode and use a bowl gouge to turn a roof with a concave or convex shape leaving a 1 ½" flat centre at top to glue in and turn a finial. While mounted Drill a 5/8" hole in top about ½" deep to mount finial.

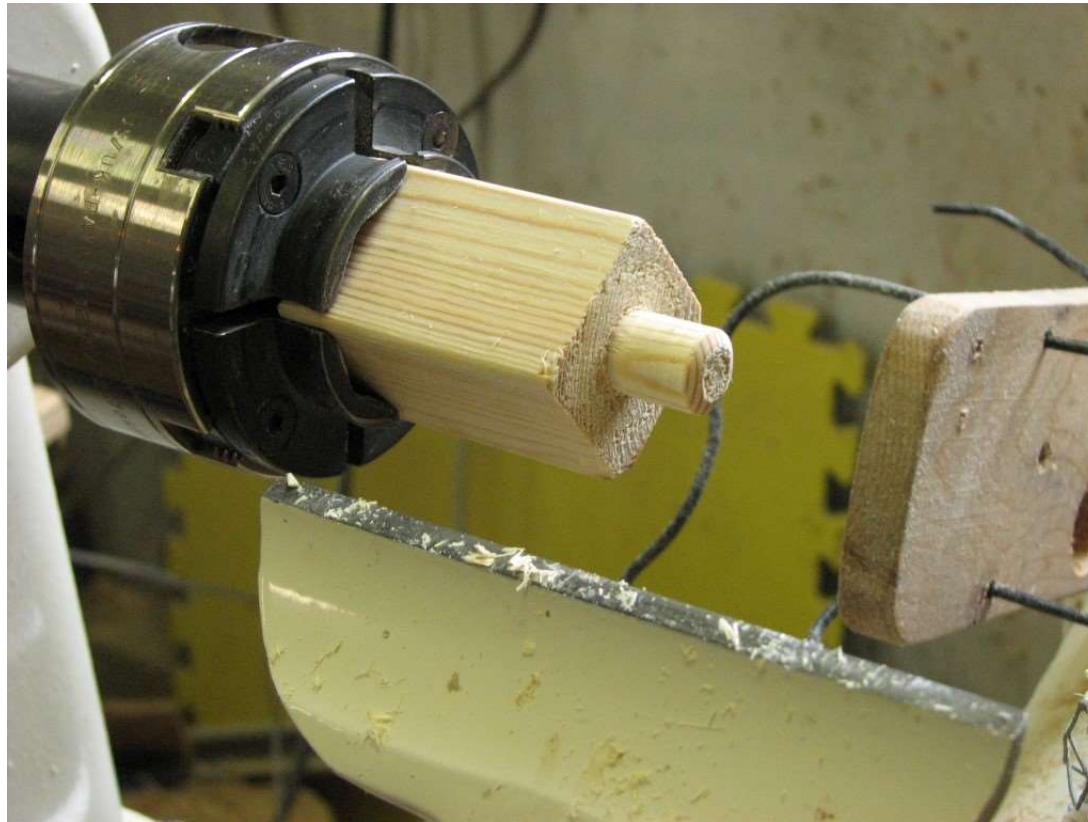
# Spindle Technique to avoid Tear Out on Cedar or other soft wood



Tear out on end grain in Cedar is brutal. Careful use of a Fingernail Grind 3/8" Spindle Gouge with bevel rubbing can achieve skew like cuts on the top surface of the roof. I grind this tool with the same Oneway Vari-Grind at same setting as my bowl gouges but a 1" block inserted in the Wolverine to steepen the angle. This happens to be at 45° .



Turn 5/8" x 1/2" long tenon on  
Finial Blank for Roof



Make sure shoulder is square to tenon base

Glue in place with PVA and clamp or  
place between centres on lathe to  
achieve good bond.



# Base plate Blank

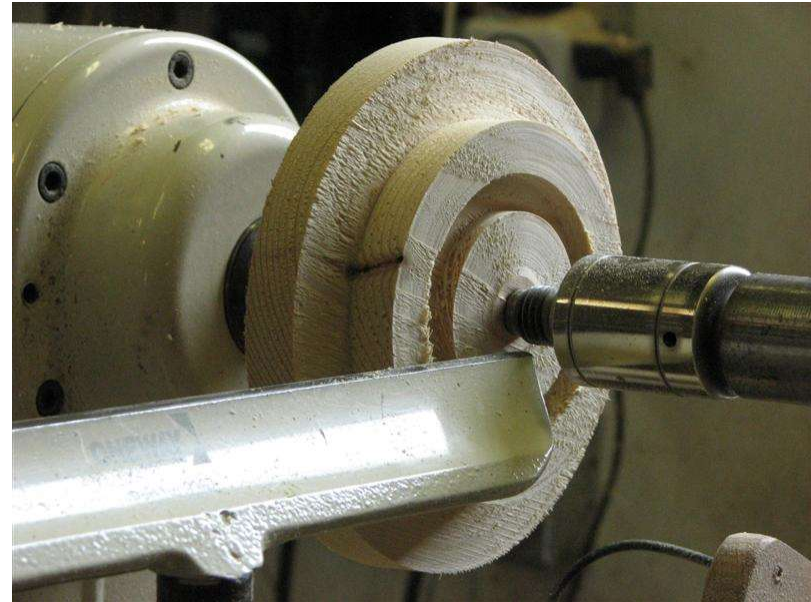
- Base is band-sawed from a glue-up of two pieces of 2x4" or piece of 2x8 ~7" in diameter or  $\frac{1}{2}$ " larger than body diameter. Mark centre.
- Mount between centres or against backing faceplate and true up most of edge with bowl gouge and make about a 2" tenon to mount on chuck.





# Turn Tenons on Base Blank

- With Parting Tool, turn a recessed tenon to mount in chuck jaws, Diameter dependent on your chuck setup. With very large jaws, just use the insert tenon.
- With Parting Tool and small bowl gouge, turn larger insert tenon to secure the base inside the body. Allow sufficient length of the tenon (about  $\frac{1}{2}$ ") for screws to bite from outside body



# Shape Exterior of Base

- Using a bowl or spindle gouge, turn a pattern for the base with a  $\sim 1\frac{1}{2}$ " raised area in centre to mate with base finial.
- Sand with 120 grit sandpaper on lathe



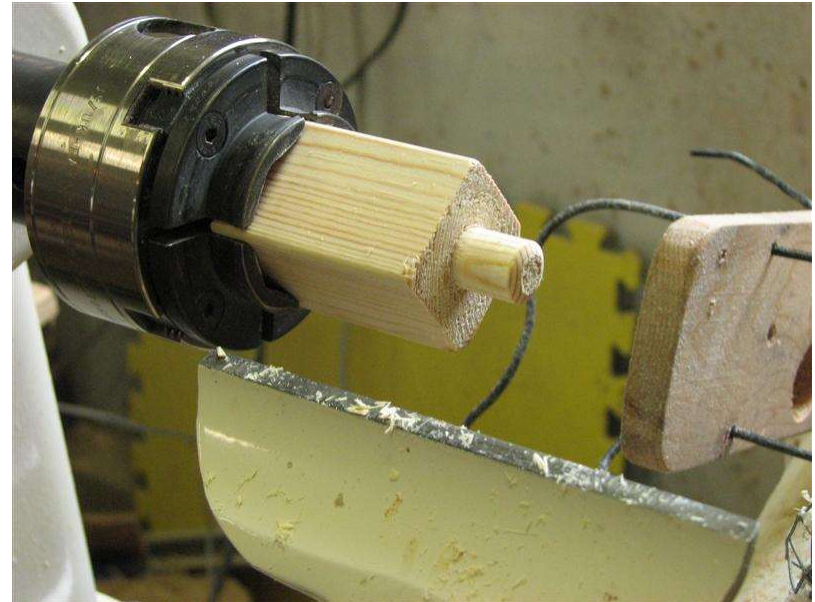
# Drill Mortise for Base Finial

- With a 5/8" Forstner bit held in Jacob's Chuck in tailstock drill a 1/2" – 5/8" deep hole for finial tenon.



# Turn tenon on Base Finial Blank

- Turn a 5/8" diameter tenon about 3/4" long a 3" piece of 2x2 matching wood. Base finials may also be turned just short of completion and then glued and finish turned in conjunction with last stages of base plate.





# Glue Base Finial Blank to Partially completed Base

- Again with waterproof glue, mount the tennon blank to the base.
- Note variety of base configurations



# Turn Base Finial

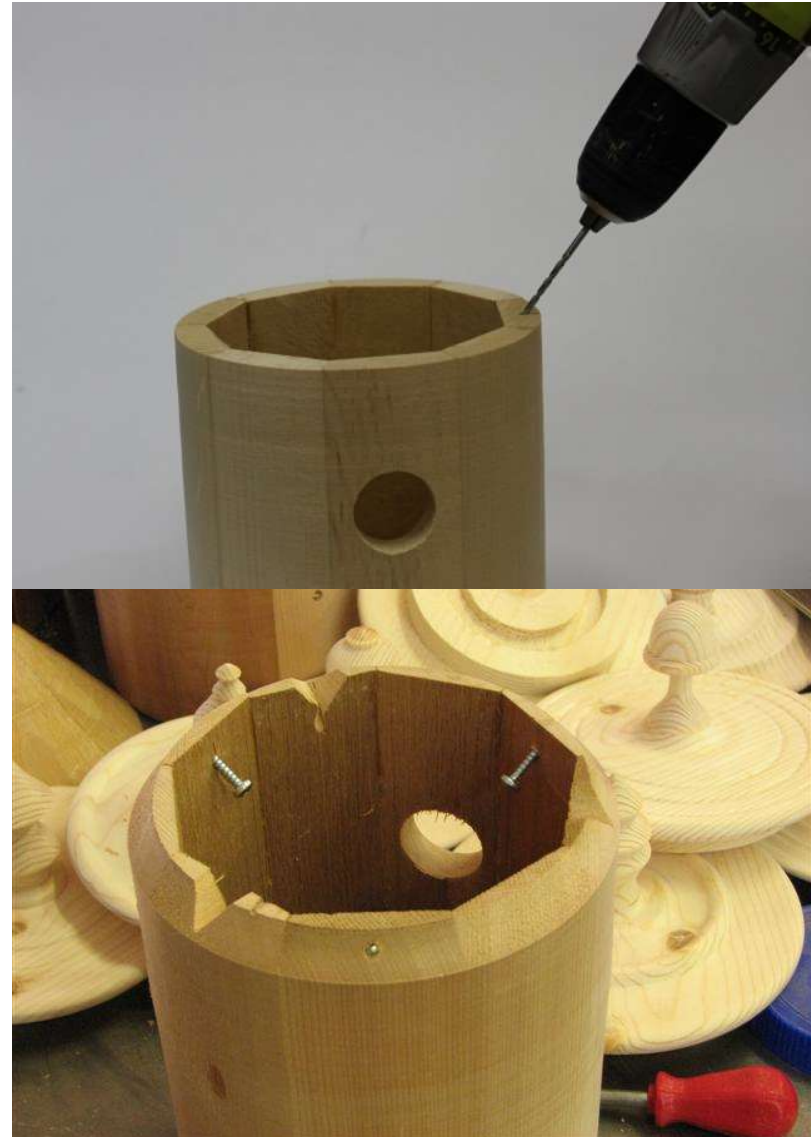
- Remount the base with recessed tenon in the chuck jaws and turn the base finial according to your inspiration of the moment. This is a birdhouse. Let Whimsy prevail!





# Assembly

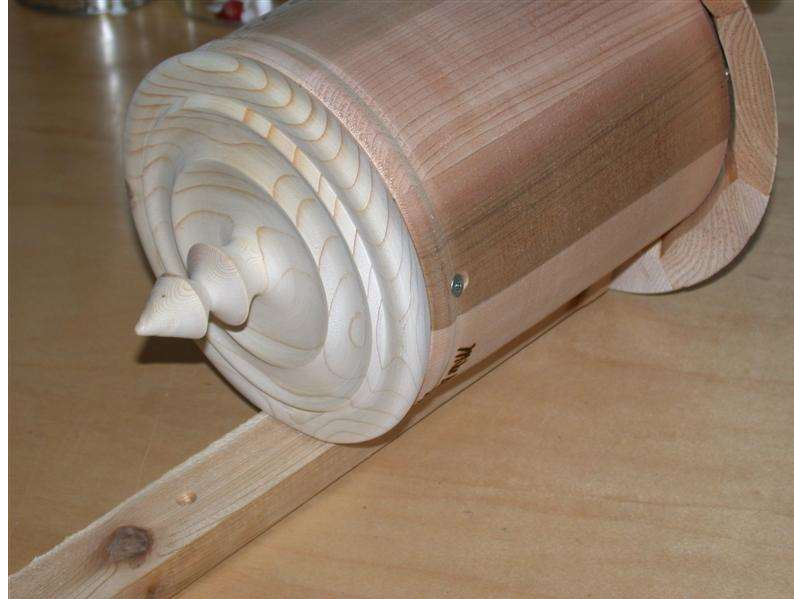
- Drill 3 - 1/8" holes at ~45° on the beveled edge of the body to mount roof. On the flat surface, start with a dimple. Attach the roof using a Stubby screwdriver and suitable 1"-1 1/4" coated screws.
- Chamfer not needed with this roof design
- Ventilation cuts optional
- See also earlier slide No. 4 using Pocket Hole Technique.



# Base Assembly

- Depending on design of base, a small piece of base overhang adjacent to the mounting slat may have to be removed prior to mounting.
- Drill 2 – 1/8” holes around perimeter of the body about 1/4” up from bottom edge so that 1 1/4 ” coated deck screws can be used to secure the base to the body. Position the holes so that they may be accessed for removal of base to clean each spring.
- Due to screw placement in mounting slat, base may need installation after positioning bird house in final place.
- A few drain 1/4” holes could be drilled in base plate.

## Screw Placement for base

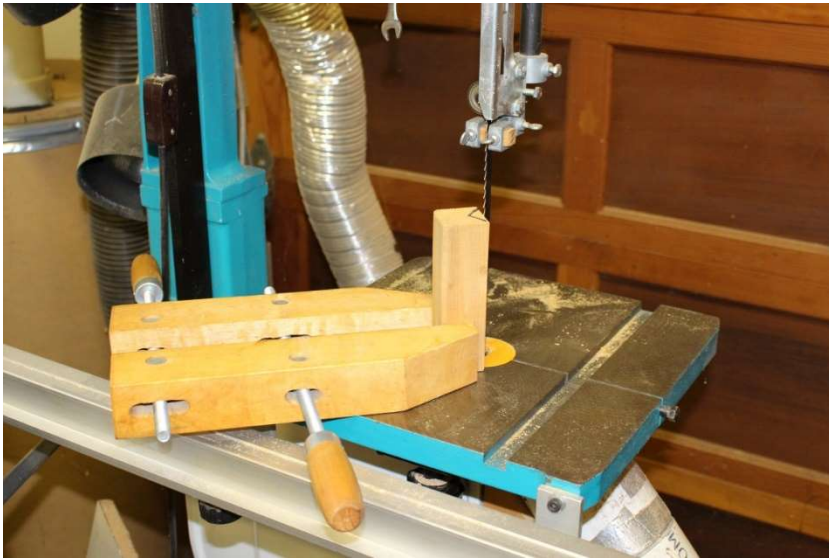


If a bead is used on the bottom of the body, angle the hole slightly down and drill just above the bead.

# Mounting Slat

- Attach to the back of the body a piece of 1x2 2x2 or 1x3 approximately 14-16" in length. 2x2 may help with roof overhang when mounting on post, fence or tree etc.
- Drill two 1/8" screw mounting holes in the back of the body, one directly opposite the entry hole can be accessed through the hole.
- Secure slat with a 1" screw inserted using a stubby screwdriver from inside the body.
- Robertson square drive screws used throughout construction.
- Mount in final place using a couple of 2" deck screws through the slat into tree or fence etc.

# Alternative Mounting Block



A piece of 2x2 4" to 5" long with a shallow V cut in the face can be used as a hidden mount. This block also provides for a bit more roof overhang than the slat. It is fastened first with long deck screws to wherever the birdhouse will be situated and then the birdhouse is secured to it using suitable screws as in mounting the support slat.

# Mounting Block and Screw Placement



Top screw opposite hole and  
bottom screw angled from  
bottom.



## Yet another alternative, body from a small tree section



This is a piece of recently cut Ash about 6 ½ - 7" in diameter and hollowed to a depth of 7" deep x 5" in diameter. A work in progress.

# Brief Overview of Hollowing



Mounted between centres, a 4" x 7/16" tenon was made, mounted in No. 3 jaws of Oneway Stronghold Chuck, drilled to 7" deep with 2 1/8" Forstner bit, hollowed in stages; bowl gouge to about 3" depth, hand held #3 Hunter tool for about another inch, Martel Hook tool in a 20" x 3/4" bar with 20" handle, to near final depth and finished with a Lyle Jamieson #1 Hunter Tool and adapter in same hand held bar.



The 1 1/4" entry hole was drilled on a drill press and the same size hole through the pith of the top. Remounted using expansion mode of Stronghold Chuck inside body with #3 jaws and 60° live center. Tenon reduced to about 2" dia. for roof alignment.

# Unexpected Design Opportunity



I had placed this my drying kiln with some bowls for almost two weeks and then had taken out and left in my shop. A small crack had grown considerably all the way up to the top with a gap just over 1/8". I had left about 1 1/2" of wood crowned at the top and stresses developed just as when drying bowls. I taped inside with masking tape and dribbled in a couple of applications of 5 minutes epoxy to seal and clamped overnight. Next edition will be hollowed and then the top piece parted and sawn off.

# Finished Log Section Birdhouse



Will look a bit better when roof and base are weathered.



# Hollowing Tools



39" Hand Held  $\frac{3}{4}$ " Bar for Martel Hook Tool or Jamieson #1 Hunter Tool



Homemade Hunter Tool #3



Left – Jamieson #1  
Hunter Tool Adapter

Right – André Martel  
Hook Tool



# Alternate roof design

- For compound staved roof see original design at <http://www.ghwg.ca/techniques/Turned%20Bird%20House.pdf>
- Further still, a glued ring construction could be used for the roof. I leave that to you to design. My early attempts were not worth the work and soft wood rings did not part off well.

# Wood Sources

## Staved Body:

6 foot 6" wide cedar fence boards work well. They are only about 5/8"-11/16" thick but that is enough. Rough sawn pine barn board can be milled into 2 1/4" strips and easily re-sawn to that thickness on a table saw. I have not tried spruce but do not see why it would be a problem. Spruce turns nicely with sharp tools.

## Roof and base and finials:

2x4, 2x6 and 2x8 Cedar, pine or spruce. For glue-ups edges should be planed or jointed and top and bottom surfaces planed as needed.

# First three of this design



Lots of opportunity for roof and finial designs.

# Additional Notes

- I did not apply any finish, preferring to allow it to weather to a nice gray colour.
- For Tree Swallows or Bluebirds – use 1 1/2" hole
- Some sources quote 1 1/8" hole for wrens

# Enjoy your feathered friends!





# Or other visitors!



# Additional Resources

**American Woodturner March 1992**, pgs 2,3,4

Turned Birdhouses – Robert Rosand

**American Woodturner March 1997**, pgs 14-18

Turned Birdhouses – Susan Schauer

Both above available on-line as a pdf in member's section of AAW website

<http://woodturner.org> in Journals Archive

**American Woodworker March 1990**, pgs 16-21 Issue available as pdf at

<http://www.shopwoodworking.com/> for \$5.99 US

Turned Birdhouses – Andy Barnum

Viewable on Google Books, Search “American Woodworker March 1990”

Same article appeared in Woodturning Magazine Issue No. 3 Spring 1991 and is also contained in Useful Woodturning Projects, The Best from Woodturning Magazine ISBN 0 946819 807

- Hope you have enjoyed this project. It is obviously easier to do in quantity as many steps are required.
- Drop by my Photo Album at [www.picturetrail.com/mikebrazeau](http://www.picturetrail.com/mikebrazeau)
- Send any comments or questions to [mjbrazeau@sympatico.ca](mailto:mjbrazeau@sympatico.ca)
- Completed April 2017