

# Conowingo Models



## Pennsbury Hydroelectric Mill

HO SCALE



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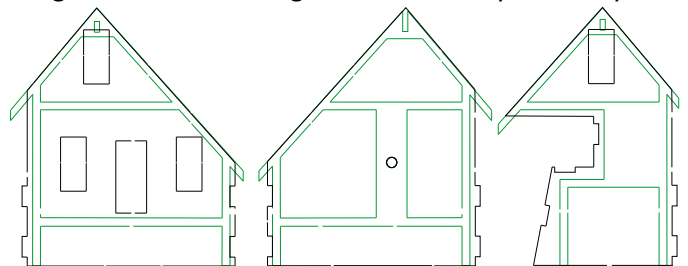
Thank you for purchasing this kit!

From <http://www.karenfurst.com/> "Pennsbury Mill at Hilandale Farm is a historically significant twentieth-century hydro-electric and pumping mill located in picturesque Chadds Ford, Pennsylvania. Owned by John Danby, a Wilmington, Delaware, banker, the mill and dam were built in 1919 by the Fitz Water Wheel Company before a commercial supply of electricity was available in Chester County. The technology was simple: water flowed from the dam through a race to the wheel which was connected to a generator. The resulting electricity powered lights for the property's house and barn. The execution of the mill, however, was quite complex. Numerous calculations and extensive planning were required before construction started. Nevertheless, the completed mill was considered state-of-the-art. The Fitz Water Wheel Company used its image for advertising, local electricians Garrett Miller & Company had photographs of it on their office walls, and there was government interest in it as a prototype building."

We first came upon photos of the building in 2015. Further research revealed it is located roughly 45 minutes north of us. There really isn't much information available on it- what we've included above is a majority of what we found. Thanks to some lucky e-mails, we were able to get ahold of architect Karen Wood, who was involved in the restoration. She had done architectural drawings of the mill and took us on a tour of the facility. At our request, she provided copies of her drawings, which we were able to convert to HO scale. We've done the best we could to make it as accurate as possible, but had to take a few liberties for scaling purposes.

### 1. Bracing-

Start by gluing the interior bracing to the outer walls. Drawing below shows exterior parts down with bracing (in green) on top. Use the dowel to ensure the hole for the water wheel is free of obstructions. Don't worry about the ridge beam showing in the end windows, they won't. Should you choose to brace the interior walls, I recommend only doing the short front wall and the rear wall area behind it. Do not brace the water wheel area as it may show or obstruct the wheel from moving. You may want to weight down the bracing so it dries evenly and flatly.



### 2. Cut the dowel so that there is an approximate 2-inch piece. Use the short piece periodically to align the holes for the water wheel.

### 3. Paint the parts as follows-

- Black** - strap hinges  
short dowel for water wheel  
derrick attachment loop  
supply pipe (longer dowel)
- Brown** - door/window shutters  
fascia (4 pieces)  
shingles on the outside of derrick  
underside of the roof

**Weathered Grey** - ends of the roof supports (Don't forget those used on the building as part of bracing.)

### White – door, windows

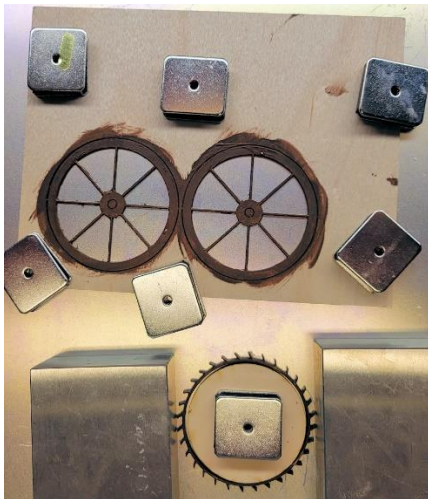
In order to accurately portray the proper door, a piece of 1/32 plywood was cut to match the real door and will fit in the plastic door.

### 4. Water Wheel –

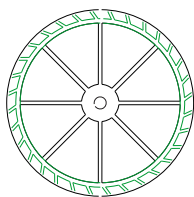
Very carefully cut out the paddles. We had to balance accuracy and durability in cutting with something that won't fall apart during transportation.

Painting - If you look up this mill on the internet, you will see several photos of a red wheel. It photographs different ways. Find a happy red/brown medium.

The water wheel components will warp, so we recommend cutting out the triangular middle pieces but leave it in the carrying tray (and weighted) for the first coat. The paddles should be painted and have the disc put back in with some side support for drying.



When dry, cut out the outer walls. Next, glue down paddles as evenly as possible to an outer wall (on bottom). Once you are satisfied with how the setup is, glue the second outer wall to the paddles, ensuring the spokes are even. We suggest using the dowel to ensure the pieces are aligned properly. You will need to do some paint touch up once the wheel is completely dry.

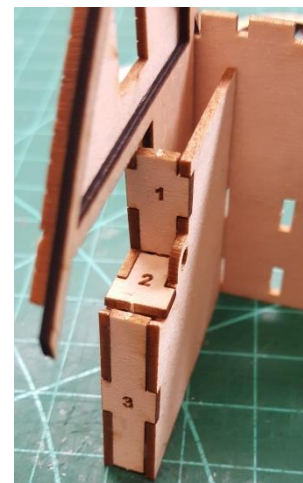
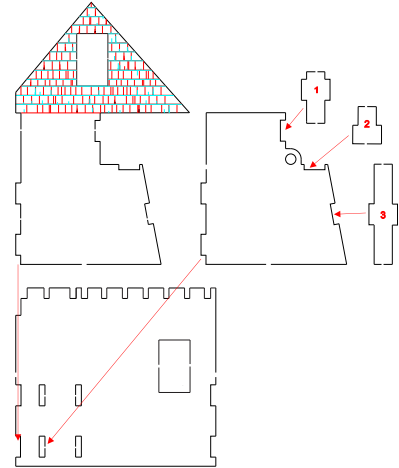


### 5. Derrick assembly-

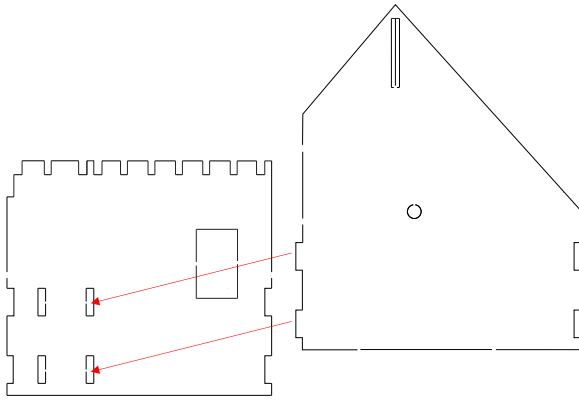
Be careful. This is where things can get a little tricky.

**Read through the entire step before proceeding.**

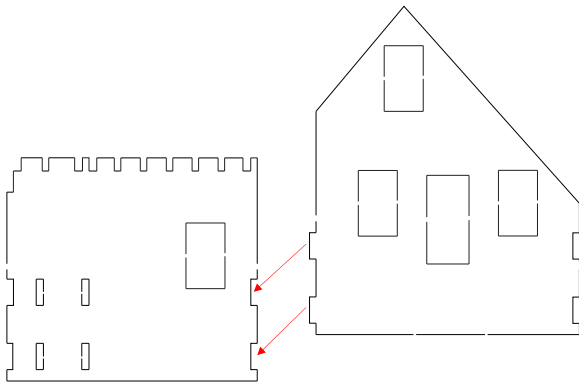
- Lay the rear wall down so that the window opening is on the right. (bottom-most part in this diagram). Fit the inner and outer derrick walls in the notches as shown below. (Two pieces immediately above the rear wall). You can glue them into place using a slow drying glue. **HOWEVER**, we **recommend you only dry fit** them for now in order to help with adding the rock paper to the main building walls. If you dry fit, glue the derrick in place at step 12L.
- Dry fit the pieces marked 1, 2 and 3 across both derrick pieces so they fit flush. See photo below.
- Once you're happy with the fit, glue them into place, ensuring the derrick is square with the rest of the building.



- We recommend doing steps 6-9 in the same session, using a slow-drying glue. With the back wall flat, glue the left "center" wall into the two notches. (right piece on diagram below) It should be at a 90' angle. Cut out the notch for the ridge beam.



7. Glue the right wall into the two notches. It should also be at a 90° angle.



8. Glue the front wall (small piece not shown) into the notches, so that the word "front" is visible.

9. Sit the building up to ensure it will sit level. Adjust as necessary and let dry. Use the dowel to ensure proper alignment.

10. Now would be a good time to glue the acetate to the windows. I use Testor's Clear Parts Cement for this part. I did all windows regardless of whether or not they will be displayed or covered in shutters. You could also glue the plywood door to the plastic door.

11. Attach the shingles to the roof, ensuring that the shingles on the front match up all the way across. Do not add the ridge cap until later.

## 12. Rock Paper –

The following step you may wish to deviate from. It is designed to show off the front and door side of the building. The pitfall of using the rock paper is that it may show a white seam that will need to be either covered or camouflaged.

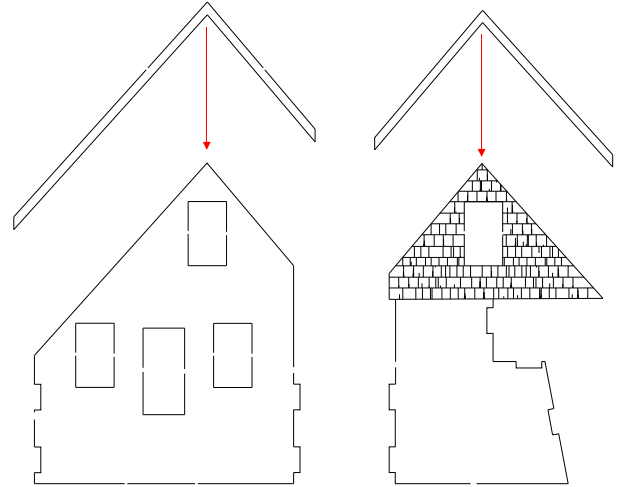
**Hints on applying the rock paper-** Use it in manageable pieces. Glue down only one side at a

time. Keep it straight. Ensure the shadow is on the down side. Use lots of glue and pressure to get and keep it as flat as possible. Don't worry about the door/window openings. However, you should cut around the roof supports.

- A. Cut and glue into place a piece of rock paper for the area between the derrick and the "center" wall. You could use a fast-drying CA for this step.
- B. Measure and cut out a piece of rock paper approximately 3.5 inches high and 9 inches long.
- C. Glue this piece into place starting from the left, rear side of the main building (center piece) (Step 6). We'd recommend switching to a slower drying glue to help with manipulation.
- D. Apply pressure and let it dry.
- E. Glue down the front piece as in step C, ensuring the corner is as close to 90° as you can get it.
- F. Apply pressure and let it dry.
- G. Glue down the door-side piece, again as in step B and again ensuring the corner is as close to 90° as you can get it. Consider whether or not the follow-on piece will overlap or underlap and cut accordingly.
- H. Apply pressure and let it dry.
- I. To keep things manageable, you may want to trim the paper at the top of the building and at the corner you just glued down. It doesn't have to be perfect, just get it manageable.
- J. Measure and cut out a piece of rock paper approximately 2.5 inches high and 3 inches long.
- K. Glue the back wall piece into place, taking into account the overlap on the corners.
- L. Apply pressure and let it dry.
- M. Glue the derrick wall in place if you haven't done so already. There is a small tool included to assist in keeping the right spacing.
- N. Cut out two more pieces of rock paper 2 inches high by 3 inches wide.
- O. Plan on how you are going to wrap the derrick. We recommend switching back to the fast drying CA for this step. Begin by wrapping forward from the rear wall on the left side. Using a pair of scissors, cut the paper so that it wraps around Piece 1 but lays flat otherwise. Cut the edges even. Use the second piece for the opposite side. You will need to cut a third piece to fit over pieces 2 and 3. Don't forget to apply lots of pressure while the CA sets.



17. Add the pieces of fascia to the two outermost walls. The tops of each should match up with the roof line.

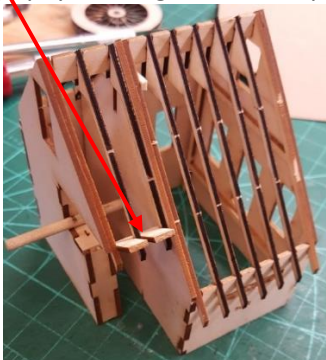


13. Cut the window and door pieces out of the rock paper. Do the same for the slots where the roof supports will go.

14. Insert the ridge beam into the slot on the “center” wall on either end, ensuring the large notch will meet up with the “center” wall. You can slide it through the window over the derrick. As you do this, add the roofing supports to their respective sides. Don’t push them into the notches yet. You will have two smaller supports on the derrick side and five longer supports on the building side. Ensure the longer ends are in the front.

15. Insert the ridge beam tabs into their respective attachment blocks. You will need to gently bend the derrick side to get that tab into the block. They can be glued in, but generally are tight enough that glue isn’t required.

16. Gently slide the roofing supports into position on the ridge beam as well as the front and back walls. There is a wood tool supplied to hold the supports even over the derrick. Once you are happy with the supports lining up, you can glue them in place.



18. Using CA, add the two remaining pieces to the outermost edge of the **shingled roof piece** in a similar manner as above.

19. Glue the windows and door into place. The door is a dutch door, having both a top and bottom that open independently. Should you choose to display it open, you will need to cut the plastic door out of the frame before installing it.

20. Add the strap hinges and shutters as you see fit. Using CA will get a faster solution. The main floor shutters are all one piece. The upper windows are of a two-piece design.



21. You can now remove the dowel, add the water wheel and reinsert it. You can glue the dowel into place if you so desire.

22. Fit and glue roof into place.

23. Complete roof by adding the roofing cap shingles.

24. The two roof supports above the water wheel (see step 16, where there is a tool holding the two supports into place) will need to be glued to the roof. Otherwise they hang down.

25. Add the dowel to the rear so that your mill gets water! See photo below for proper placement.

26. Please share your photos on our Facebook page!  
<https://www.facebook.com/ConowingoModels>

Once again, thank you for your purchase!

If there are any parts missing, please e-mail me what you need to complete the kit and I'll send it your way. I'm a one-man shop and I do occasionally miss things. Also suggestions for improvement are welcome.

Please send photos!

See the Conowingo Models website  
[www.conowingomodels.com](http://www.conowingomodels.com)  
Or our Facebook page  
<https://www.facebook.com/ConowingoModels/>  
for more exciting, funky buildings and rolling stock for your model railroad!  
Many thanks to my family, Karen Wood, Jeff Grove, Steve Milley and Mark Schreier for their support!

