

Suggestions for Making Appropriate Old House Porch Stairs, Balustrades and Newels

by Dan Miller



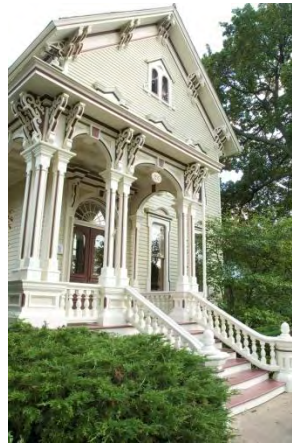
Preface

We bought our first old house in 1975. There were marks on the porch posts showing that there was a frieze at the top. We started studying porches to figure out what would be appropriate to put back there. After studying a lot of other old houses we selected a pattern and our love affair with porches began. I rebuilt the porch and learned a lot by watching my work rot away in a matter of years.



In 1979 we bought an investment property at right and rebuilt those porches.

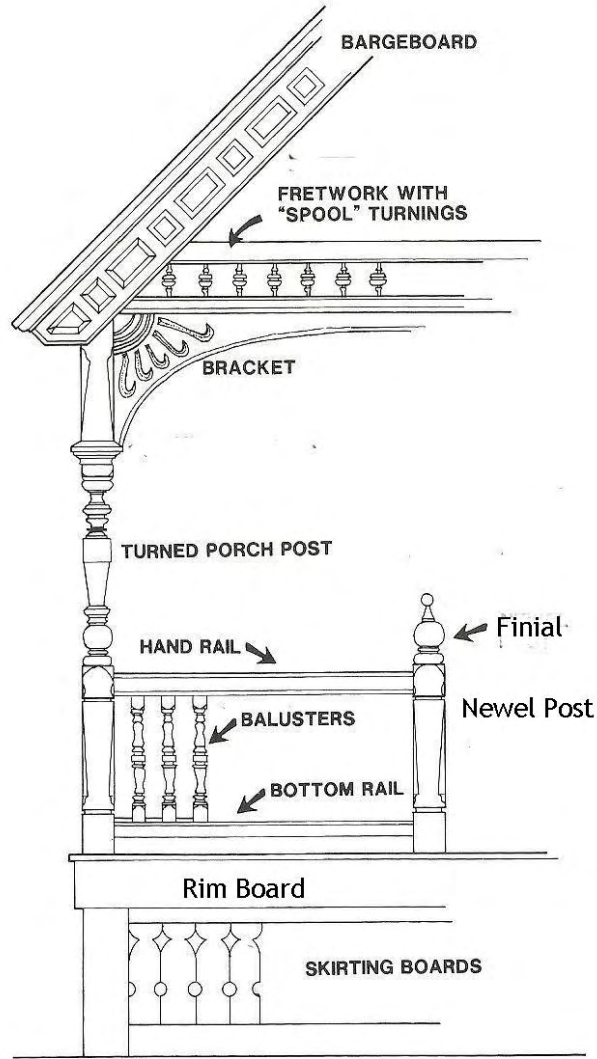
In 1986 we bought our dream house which had its original porches replaced with Prairie Influenced stucco porches so we started a major study of Italianate porches to try to design a new and appropriate porch for our home. When we went on vacation we took pictures of porches, not scenery. Here is a before and after view of the porch I built.



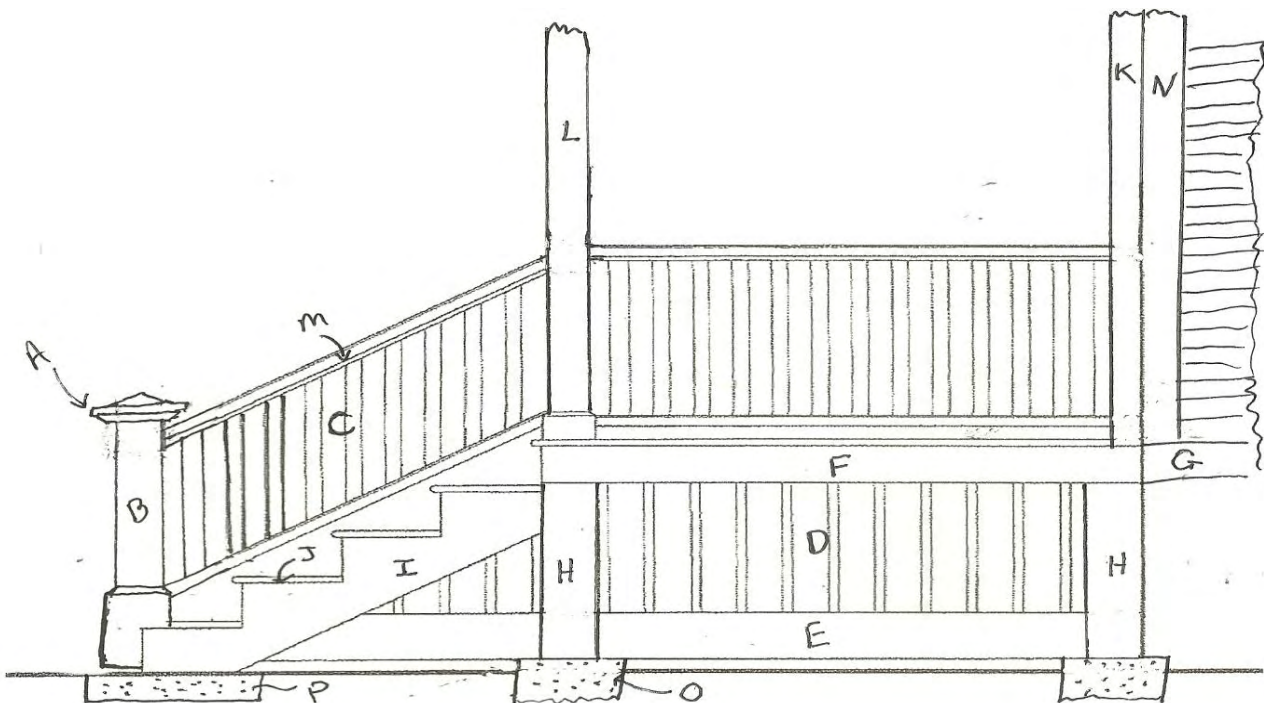
Here are other porches that I have built.



Some definitions



The letters on this drawing indicate the portion of the document where that particular detail is discussed.



A. Newel Cap

Every newel post has to have some type of finial or cap to keep the water out.



The big box stores offer several premade newel caps. Suppliers are mentioned only for the convenience of the applicant, not to endorse a single store.

This cap is from Menard's



Menard's has several finials



Vintage Woodworks has a variety of finials in various sizes

<http://www.vintagewoodworks.com/>

903-356-2158

Suppliers are mentioned only for the convenience of the applicant, not to endorse a single company.



Small Traditional

4" tall

3-1/4" diameter

Similar items:

Large Traditional

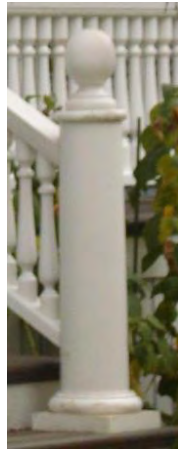
(5-1/4" d x 6-1/2" h)

Extra Large Traditional

(3 sizes)

B. Newel Post

A porch newel post should be the same width as the porch post. If the porch post had panels, the newel often did too. A turned porch post had a newel that is the same as the square bottom of the post with a ball finial, or it was also turned. A round column has a round newel with ball cap.



Here are some examples where the newels match the porch posts.



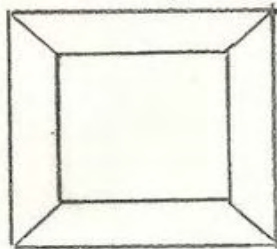
Note the square bottoms just like the porch post



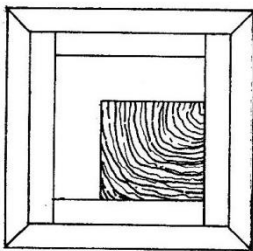
Note the round newels matching the round posts below. Square newels with a ball finial were also found with round columns.



Wooden newels can be built up to match the posts in the following manner. Use Gorilla Glue on treated lumber and prime with an oil based primer. Wood should be treated wherever possible. If not, a preservative can be applied and all end grain should be sealed and all wood back-primed.

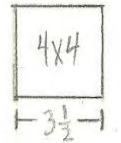


If you miter cut the 1 X wrap or the 2 X material you're using for the newel it appears to be a solid piece of wood.

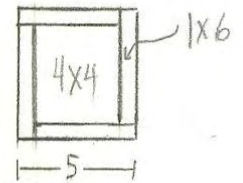


Another way to wrap a 4 X 4

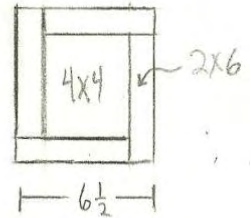
A 4 X 4 is not normally wide enough for an old house newel post.



A 4 X 4 wrapped in 1 X stock makes a 5 inch newel



A 4 X 4 wrapped in 2 X stock makes a 6 1/2 inch newel



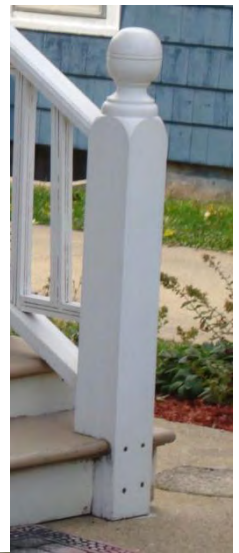
2 X material can be glued and screwed together to make any sized post you need. The round edges need to be cut off



These posts were made by gluing 2 X material with the edges mitered so the joints don't show. The base wrap is also mitered. If you are wrapping a 4 X 4 make it slightly larger than the 4 X 4 so if it expands it will not open up the joints of your wrap. Put shims in to attach the wrap then pull them out.



To make the pummels on the newel post, draw half circles on the faces and a whole circle on the top. Use a belt sander with course paper to sand up to the lines.



Round newels are made by purchasing round posts from a big box store and cutting them to the size desired. Do not buy round posts that are pine. They are often finger jointed and will rot very quickly, The fiberglass posts will last forever. The store-bought base can be used but a cap has to be made. Sometimes a 4 X 4 post can be installed with the hollow newel placed over it. Habitat for Humanity made the newels at the right in that manner for 140 N. Channing. These posts were pine and had to be replaced in a matter of years.



These newels were made by cutting down round columns purchased at a big box store. Fiberglass ones are preferred as they will not rot.

C.
D.
E.
F.
G.
H.
I.
J.
K.
L.



Attaching the newels

A notch can be cut out of the newel with it then being placed over the tread of the bottom step as shown at right. The riser has extra 2 X 6s in back of it for strength. Long timber screws or lag bolts can be used. They can be added in toe-nail fashion thru the sides, especially if the post is to be wrapped as shown below to hide the holes. The holes could also be caulked or epoxied to hide them.

Cut the risers flush with the stringer as shown at right.



For extra strength the newel can be secured before the tread is added, with the tread being cut out to accommodate it.

Thanks goes to [This Is Carpentry](http://www.thisiscarpentry.com) for the picture at right.

Go here for the full article with more pictures:

<http://www.thisiscarpentry.com/2013/11/29/attaching-bottom-deck-posts/>

Avoid using moldings at the bottom of posts or between the riser and tread. They trap moisture and rot away or cause the tread or post to rot. If you must use them make them out of treated lumber and caulk the joints so water does not get behind it.



C. Stair Balustrade

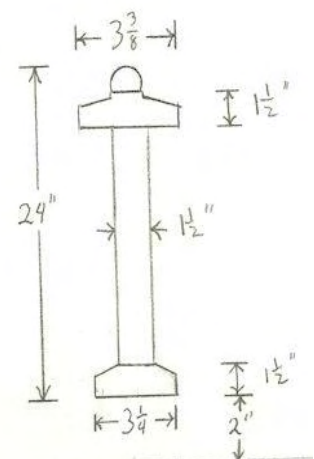
Should match the period and style of the house, and it should match the porch balustrade if it is original to the house. A turned post most often had stick and ball balustrade. Sometimes the balusters were also turned. A round porch column most often had turned spindles, harp shaped balusters or 2 X 2s either square to the rail or turned 45 degrees.

The stick and ball balustrade was very common on a porch with turned posts. This one is at 16 N. Gifford, Elgin, IL.

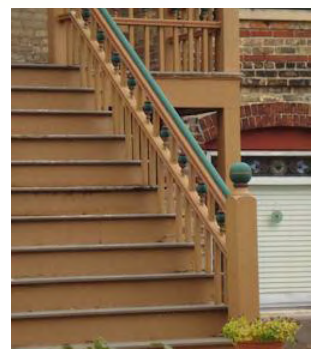


Stick and Ball Balustrade

467 Division and 16 N. Gifford



This **stick** and ball balustrade combined with turned posts at 427 Fulton, Elgin, IL.



This picture at right shows turned spindles with a turned post.



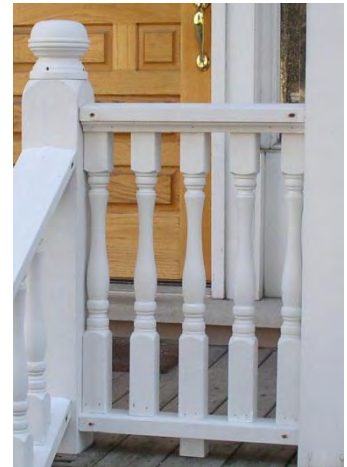
Menards makes a treated spindle that is thicker than most found in big box stores today and it is very reasonable in price. They are too long for an old house but can easily be shortened. Care needs to be taken in selecting the best ones. Oil based primer has to be used to start the painting process. Many companies can be found on-line to make custom spindles.



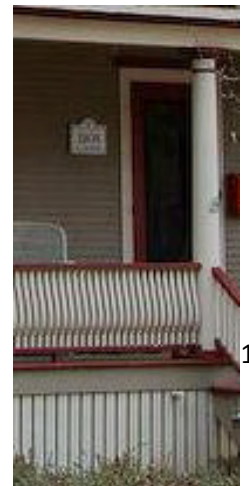
3" x 3" x 36" Colonial Spindle
Model Number: 1113501 | Menards® SKU: 1113501

\$2.98

Hundreds of the Menard's spindles were used in the reconstruction of the porch at 273 DuPage Elgin, IL as seen at the right. They were cut down from the original.



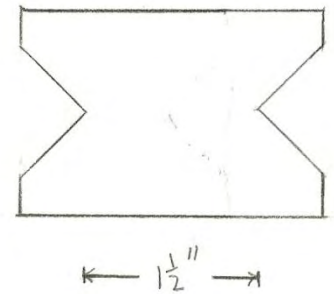
A harp baluster and a balustrade made of harp balusters with round columns



Square balusters turned at 45 degrees are often found with round columns. It makes the baluster seem wider than they actually are.



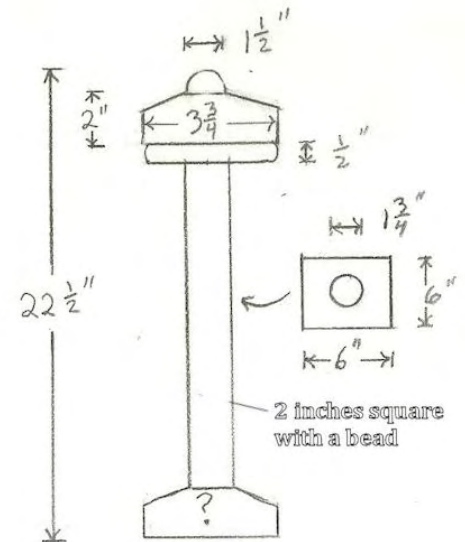
To insure that the balusters are evenly spaced, make a little jig like the one at the right out of plywood. Find the center of your rail and place the center of the first baluster on that line. Then install balusters to the left and right of the center to insure symmetry on the rail. Whatever spaces are left at the end have to be left. They may be a little smaller or larger than the rest but necessary for symmetry.



An interesting variation of a stick balustrade taken from the garbage of a porch remuddling on Laurel St., Elgin IL.



Laurel St. Balustrade



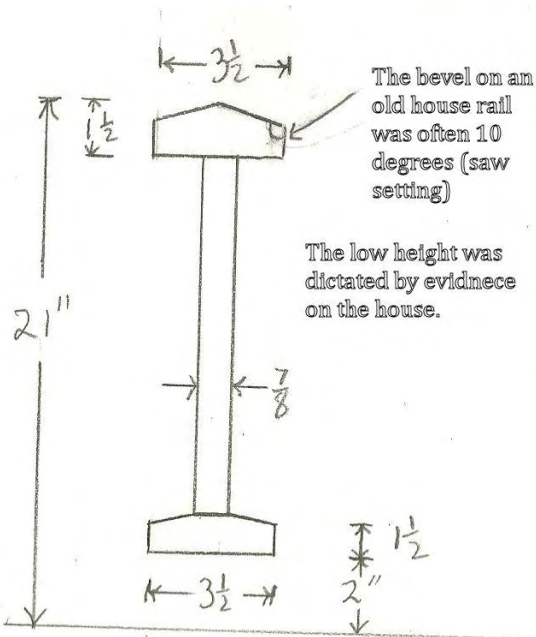
A couple of examples of what not to do added here for comic relief.



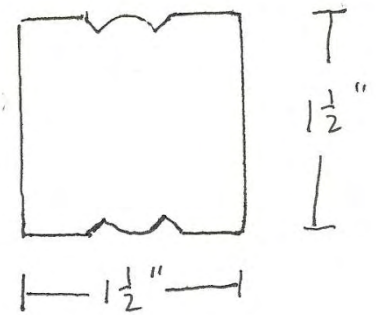
This stick and ball balustrade was duplicated from an old picture found in the Elgin section of the Library of Congress' web site. The porch and balustrade was duplicated from the picture for 467 Division.



Since the balustrade was missing on the porch at 373 Park Elgin, IL, a new one was created using a pattern found in an old pattern book. The Gothic arch in the balustrade matches the very Gothic house.

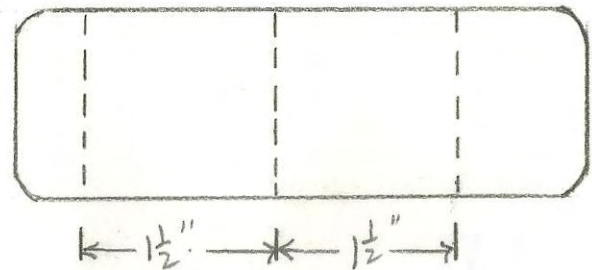


Cross section of a stick and ball baluster with a typical bead. If a wider baluster is needed cut it wider but the thickness is determined by the 2 X lumber. A thicker baluster was often 1 3/4 square so it could be cut to be 1 3/4 X 1 1/2.



A 2 X 4 is not quite wide enough to enable you to easily cut the edges square and leave enough for two 1 1/2 inch balusters. It is easier to start with a 2 X 6.

Start by cutting the rounded edges off of one side of 2X6 pressure treated lumber. Then cut the 1 1/2 inch wide balusters. Use a respirator when cutting and sanding pressure treated wood. Menard's has 2 x 6s in cedartone that are made from almost clear southern yellow pine. The disadvantage to them is that they tend to be wet. Home Depot's treated lumber is a lot drier and some vertical grain wood can be found but it has knots in it. Knots can be filled with epoxy. Care does have to be taken to get the straightest, driest pieces you can find that also have the fewest knots. Suppliers are being mentioned to help the porch builder, not to endorse any one store.



To cut the bead you need a special router bit and a 1/2 inch router. It works best with a router table but can be done without. They can be purchased at Amazon.com using the description and part number shown at right.



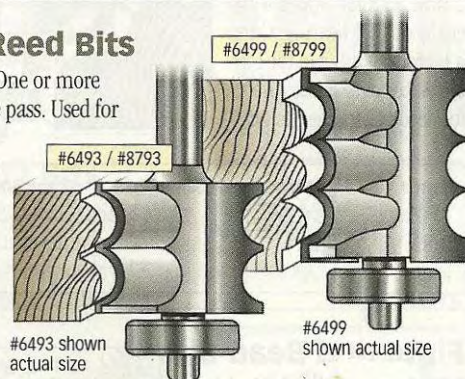
Whiteside 10-382 Blanket Chest Beading Router Bit
Item #152681
\$37.49

Many of the old time stick balusters had more than one bead down the middle. At right is one from an old pattern book with two beads. MLCS has a wonderful assortment of multiple bead router bits for sale. mlcswoodworking.com 1-800-533-9298. Suppliers are mentioned only for the convenience of the applicant, not to endorse a single company.



Multi-Bead/Reed Bits

2 flute, carbide tipped. One or more beads can be cut in one pass. Used for decorative edges on moldings, picture frames, furniture, etc. Bits come with totally enclosed ball bearing guide. Bits cut beads having a 1/4" diameter.



D. Porch apron

A turned post as show at right often had fancy sawed boards for the apron. For more patterns of sawed aprons, see pages 23 – 25.



Lattice with a frame was also used with turned posts and square chamfered Italianate posts as shown below.



You can make your own lattice panels in whatever pattern you desire or buy ready made. The inside edge of the frame on the left was routed and a half round routed molding was added for interest. The lattice at the right is made with box joints to weave them together. It is a piece of an actual lattice apron from a house that W.W. Abell designed at 327 W. Chicago. This sample currently hangs in the historical society Museum on Park St. It was duplicated exactly when the porch was rehabbed.

A round porch column, as shown at right, most often had 1 X 4 boards as an apron and sometimes lattice.

The bottom of the apron has to be at least 2 inches above the earth. Wood should never touch the earth.



E. Bottom board to frame apron

F, E&H above form the porch apron. They should be from 2 to 6 inches wide depending on the height of the porch. The bottom board E is usually wider than the sides and top.

F. Rim board

Should be the same width as the water table (G) board on the house if there is one. If there is not it should be 6 to 7 inches wide. On the side of the porch it needs to be in the shape of a trapezoid so the top edge slopes ($\frac{1}{4}$ inch per foot) with the floor and the bottom edge is parallel to the earth or the porch looks like it is falling in. The bottom of the board has to be level and the top of the board follows the pitch of the floor.

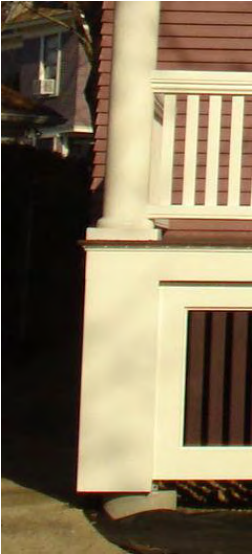


To the left is the way it was traditionally done using a trapezoid pattern for the side rim boards. .

G. Water table board existing on the house. The width of the rim board (F.) on the porch should be the same as the width of the water table board.

H. Pier cover.

Every post and half post needs to have or appear to have a pier under it showing support of the post above it. A brick pier can be left exposed or covered in wood. The wood that covers the pier can be flush with the rim board or set back from it.



I. Stair stringers

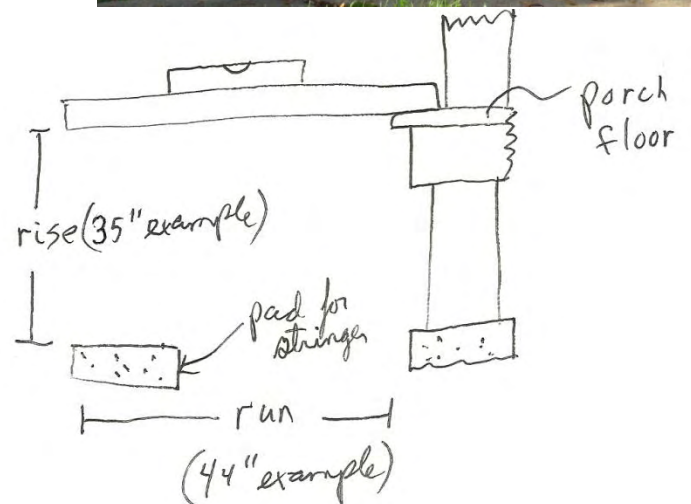
are made from a treated 2 X 12

The dimensions of all of the rises on a stairs has to be the same or it is a code violation because it causes people to trip and the step that is different from the rest is called a tripper as shown at right. Many people buy a prefabricated stair stringer at a big box store but seldom ever will that work on a given set of stairs.



The typical rise on a big box store stringer is 5 ½ inches.

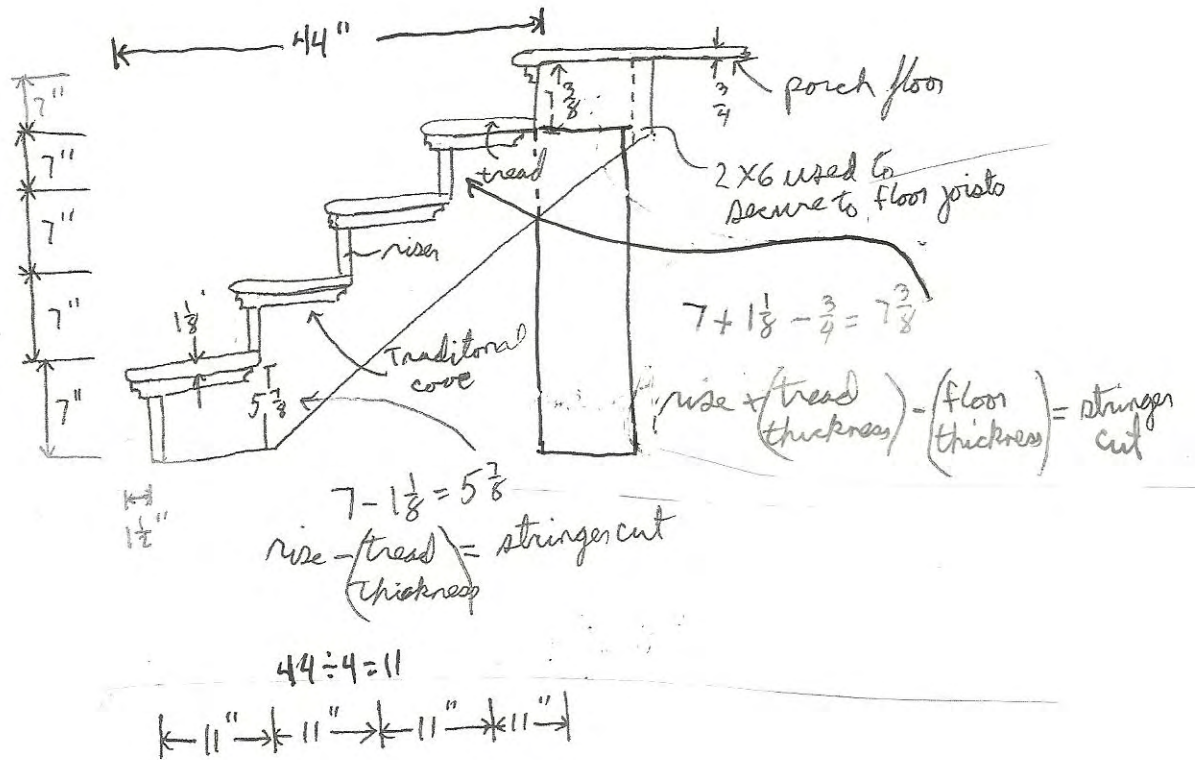
Usually stringers have to be custom cut to fit your porch and ensure all rises are the same.



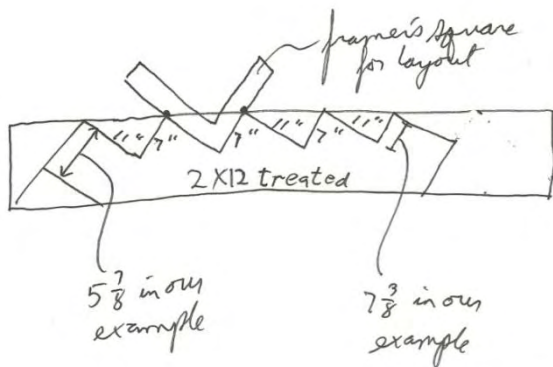
Start by finding your rise and run. Place a long board with a level on top of it on the top of your porch deck. Hold it level and measure the distance from it to the pad where the stringers rest.

If you want four steps divide 35 by four to get an 8 ¾ inch rise. Code dictates that a rise not be more than 7 ¾ inches so you will need five steps. 35 divided by 5 is a 7 inch rise.

Draw a detailed diagram of your stairs to clarify the problem in your mind. The top and bottom cuts on the stringer are different than the normal rise. By code, the minimum width of a tread is 10 inches.



Stair gauges used on a framers square make laying out a stringer much easier and more accurate.



Lay out your dimensions and cut with a circular saw up to each line. Finish the cut with a hand saw or jig saw.

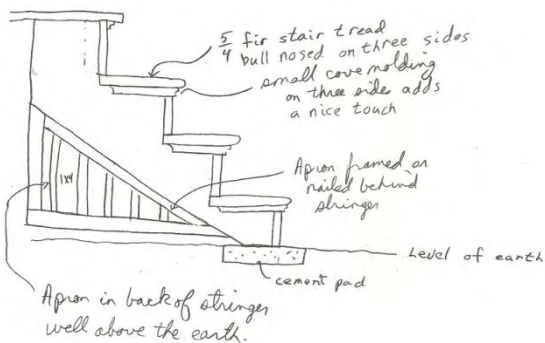
Screw the 2 X 6 to the top of your stringers and put in a riser or two. Then the whole stair unit can be installed as a unit making it easier to align, attach to the deck framing and get them level.



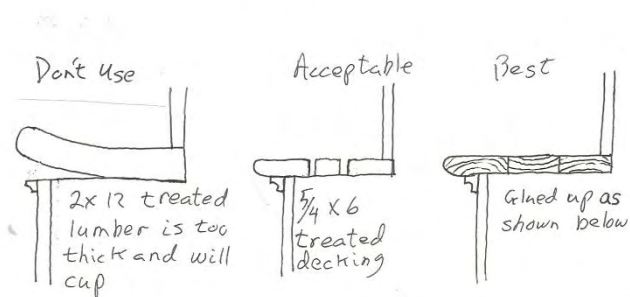
Attaching the stair assembly to the porch floor joists. Add reinforcement behind the bottom riser to attach the newel to.



I . Stair treads



Stair Treads



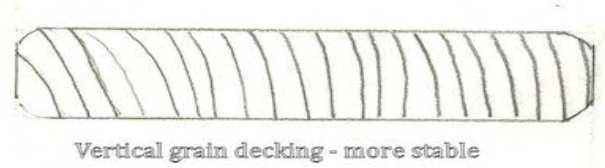
Method for Making Porch Stair Treads that look great and last forever

For 100 years on all but the largest homes, the old timers used what was called 5/4 X 12 (actual 1 1/8 X 11) fir stair treads for porch stairs. They were still readily available



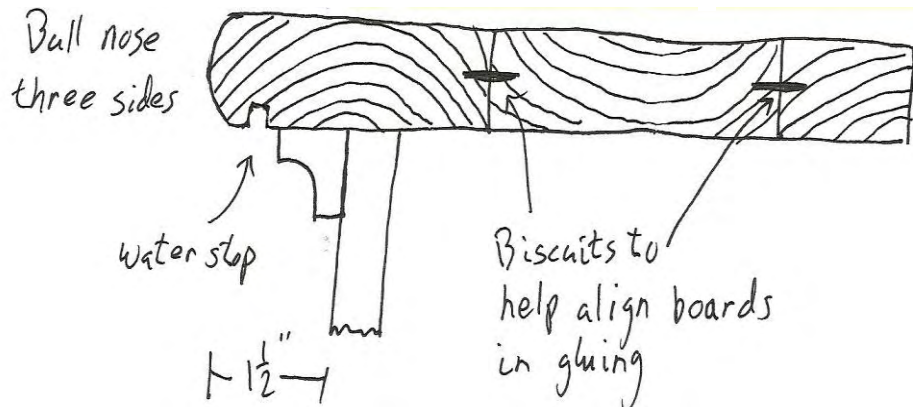
about 20 years ago but were expensive, and experience showed that they were second-growth wood that rotted in a hurry. They are not readily available today for exterior use.

A few years ago, local contractor/carpenter Scott Savel came up with a brilliant way to make stair treads using treated decking that last and look great. They have been used on numerous houses.



The decking comes with rounded edges so both edges have to be ripped to make them square. One board for each tread can have one edge left rounded as it will be routed more to make the bull-nosed edge.

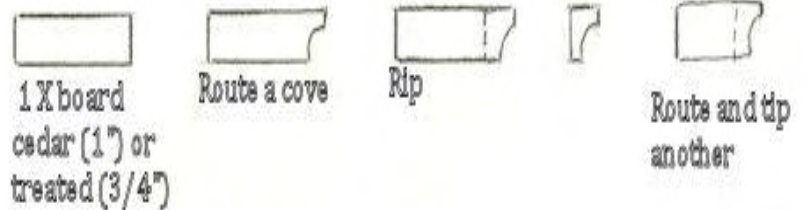
Place the boards together so that the grain alternates to help prevent cupping. It helps to use biscuits to keep the boards aligned in gluing but it is not crucial. Gorilla type glue should be used as it depends on moisture to cure.



Use a router and scraps from the process to make a 3/4 X 3/4 or 7/8 X 7/8 cove molding for under the tread. It looks really classy and will not rot. If you use a typical store-bought white pine cove molding, it will rot off in a matter of years. The short pieces of cove should be coped at the end to give a finished look.



Tricks for safely routing the cove



A cove under the treads was traditionally done

Rip the tread to final width and round over **three sides** to give a classic bull-nosed look. I rip a little water stop on the outside bottom edge so water does not come around and rot the riser.

Tread made from Menard's cedartone which is almost clear treated southern yellow pine



Both sides of the board should be painted before installing. If one side is painted and the other is not, it allows moisture to come into the wood on one side making it warp. Do not use white house primer on the treads. Everybody makes this huge mistake. If you use white primer when the final coat starts to wear through a little bit, the white underneath sticks out like a sore thumb. Deck enamel does not stick well to house primer. House primer is also not designed to walk on. It will not last. The treads should be painted with the same paint that is going on the porch floor – a high quality paint designed for decks. Read the label and either thin it a little for the first coat or use it full strength.

Pre drill countersunk holes in the tread to fasten them with screws to the risers. Use lots of screws to encourage the boards to stay in place. Fill the holes with epoxy or caulk so they do not show.

Tips on materials

The new 5/4 cedar or treated decking is actually only 1 inch thick so it was not great for making authentic treads. Recently the big box stores have come out with what they are calling thick decking, still named 5/4 X 6 but it is actually 1 3/16 thick, which makes it ideal for an old-fashioned tread. The problem with typical treated decking is that it is full of knots, although they can be filled with epoxy so they do not show through the paint.

There is a new product manufactured by Menard’s which they call 5/4 X 6 cedartone decking which is made from #1 Southern Yellow pine. The actual thickness is 1 1/8 inches making it ideal for a tread. There are very few or no knots at all yet they are very inexpensive. Take your time to go through the pile to find straight boards with the fewest knots and as dry as possible. If one Menard’s does not have a good selection, go to another. Menard’s is being mentioned here because it is the only place the product has been found.

K. Half post against the house. Round columns typically do not have them.

L. Porch post



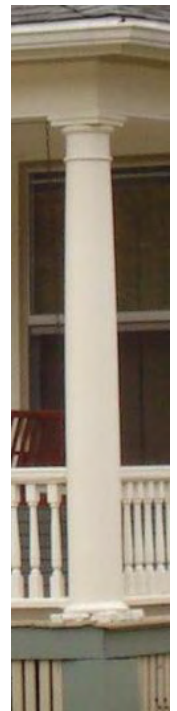
Round column on a base



Italianate Porch post with stop chamfers



Turned posts



Round column

M. The rail height should be 30 inches or less. On the porch it is normally level with the window sill as seen from the ground. It should not interrupt the window. If evidence on the house shows the original was lower

or the window height dictates a lower rail an exception can be made as is noted in the International Building code. The City of Elgin amended the International code to make it clear that it applies to all old houses in Elgin, not just those in an Historic District. Elgin's amended code reads:

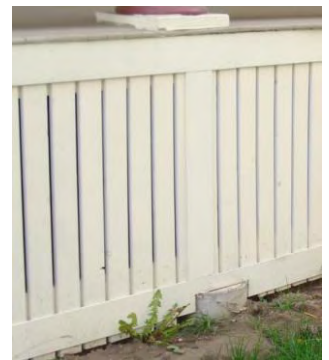
Section R1 02.8 Historic Buildings, shall be created to read as follows:
The provisions of this chapter relating to the construction, repair, alteration, addition, restoration and movement of structures, and change of occupancy, shall not be mandatory for exterior architectural features of historic buildings where such exterior architectural features are judged by the building official to not constitute a distinct life safety hazard.
For the purposes of this chapter, "Historic Building" shall mean a building that is listed in or eligible for listing in the National Register of Historic Places, or that is designated as historic under state or local law, or that is eligible for designation as a landmark or a historically/architecturally significant residential structure under Title 20 of the Elgin Municipal Code, 1976, as amended."

A new rail on the steps should match the existing rails if possible. A new rail should be 4 to five inches wide so start with a treated 2X6. Bevel (usually 10 degrees) the top and bottom rails to encourage water runoff. Use a small bed mold or cove molding under the top rail to make it look more massive. The rail on the steps should be parallel to the line the steps make with the porch floor. Measure that angle using straight edges and then cut all rails and balusters at that angle or its complement (90 – the angle)

- N. **Existing corner board** of the house. Houses that have mitered clapboards do not have one.



- O. **The cement piers** need to be as low and far back as possible so they do not show as the one at the right does. This is crucial to the overall look of your finished porch. Be very careful in laying out the placement of the cement piers to make sure they do not look like the one at right. The depth of the hole has to be checked by an inspector before pouring the pier.



P. Pad for the stringer to rest on. It is usually 4 inches thick. Be careful in its placement so it is centered on the steps which are centered on the front door or doors and is big enough to support the risers and perpendicular to them.



APPENDIX I

Sawed designs for porch aprons/skirting

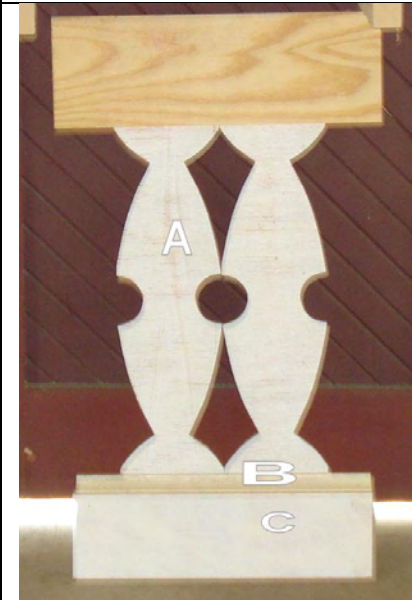
In Steve Stroud's books entitled There Used To Be Volume One, Two and Three, there are sixty-one homes pictured that have sawed porch aprons with the following breakdown:

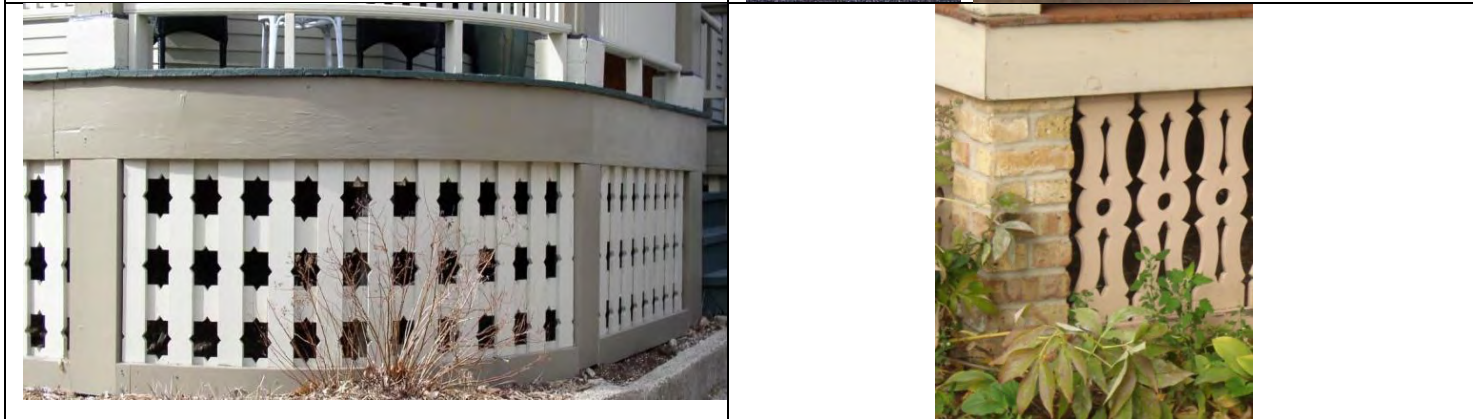
43 have turned porch posts and sawed aprons

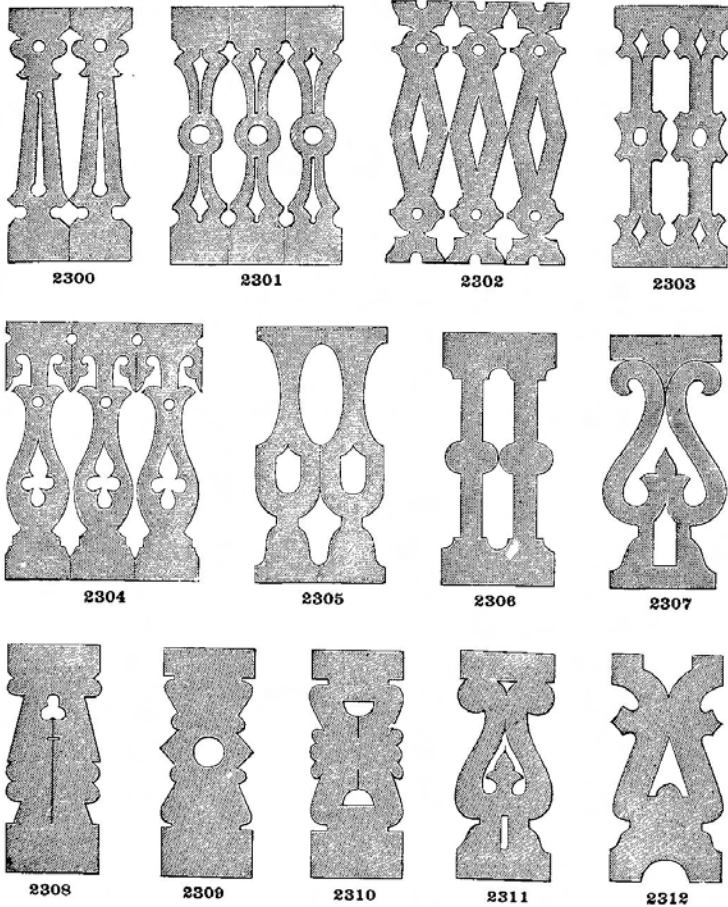
15 have Italianate posts and sawed aprons

0 have round columns with sawed aprons

Below are some authentic designs of sawed boards used for aprons.







WRITE FOR PRICES.

A page from an old pattern book. These were often referred to as porch balusters but are seldom used that way in the midwest. They are usually found as a part of the porch apron.

Appendix II

A database was created of the porch elements found in pictures in the books entitled There Used to Be I, II, and III . It shows which elements historically went together. For instance, if you are trying to determine what type of newel post to use with round columns the database clearly shows that it would be a round or square newel and not a turned one. To view the database go to:

http://www.gifford-park-assoc.org/images/stories/steves_books_summary.csv

Here is a summary of the data:

Summary of porch elements found in the pictures in There Used to Be Vol. I,II and III

	Turned post	Round post	Italianate post
Round Newel	0	5	0
Turned newel	5	0	0
Square newel	16	8	6
Lattice apron	11	6	5
Sawed apron	11	0	15
1 X 4 apron	4	25	5
Spindles	11	24	10
2X2 balusters	1	8	0
Stick and ball	37	0	3

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