

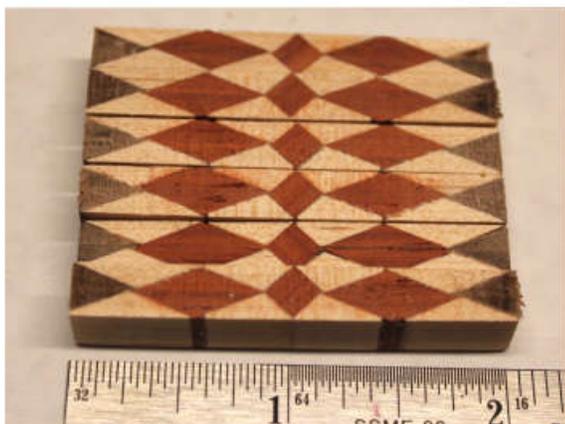


International Association of Penturners

# Studies in Segmenting X: Squares and Triangles - II

Author: Mark James November 2019

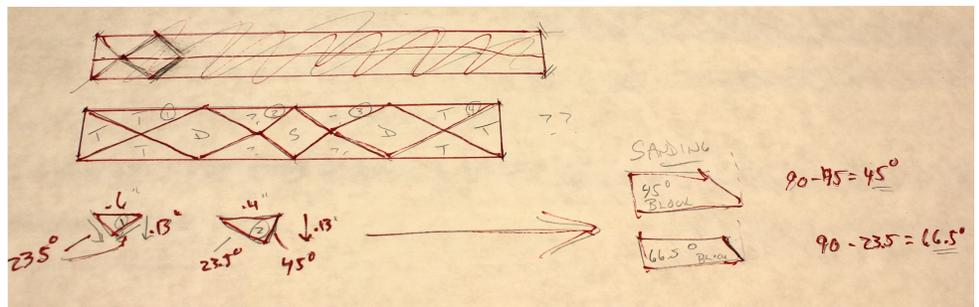
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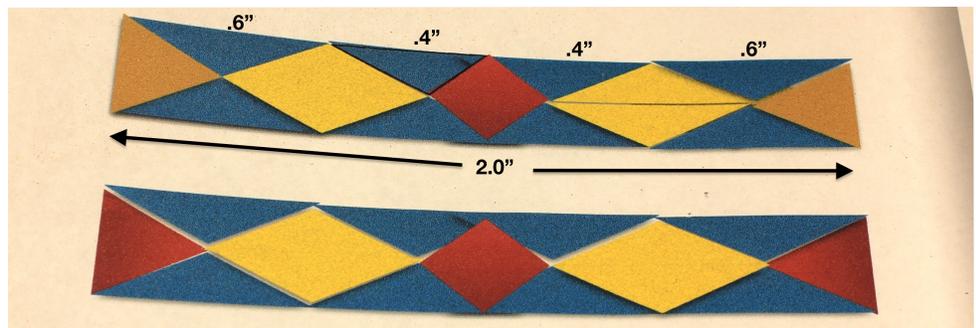
This article builds on the information on design and techniques described in "Studies in Segmenting V: Squares and Triangles". Please read that article first, as some information is not repeated here, and is assumed to be known. It also would be helpful for those interested in these applications of segmenting to make some of the inlays detailed in previous articles in this series just to be familiar with the skills needed for this particular design.

As with some of my previous designs, alternating layers of triangles and squares of different dimensions, colors and patterns are used to build a 3 layer "Sandwich" about 2.5" wide (L-R), 2" long (Top-Bottom), and close to .25" thick. For this design, the triangles were not produced from square rods, but from rectangular stock; this was needed for the types of triangles required. As always, precision and care as each step is accomplished is crucial.

**This was my initial concept**



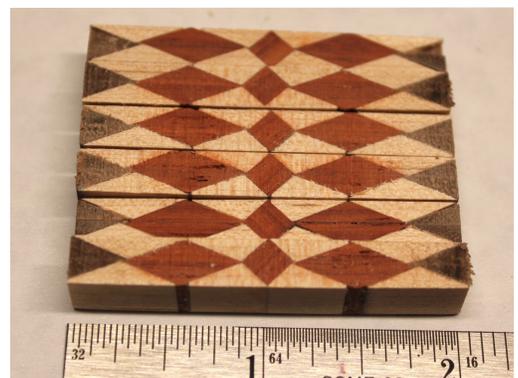
**This is a draft with some colors and dimensions**



**Starting material before sanding**

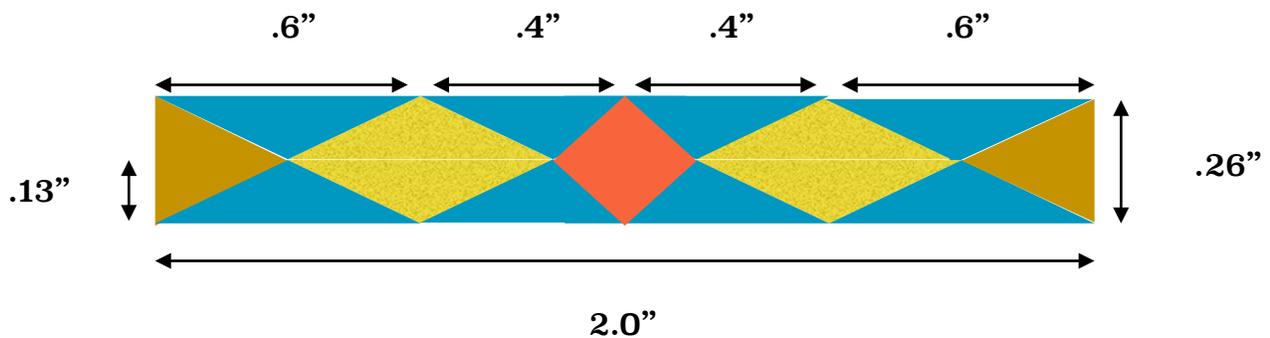


**This was the set of final inlays - version 2**

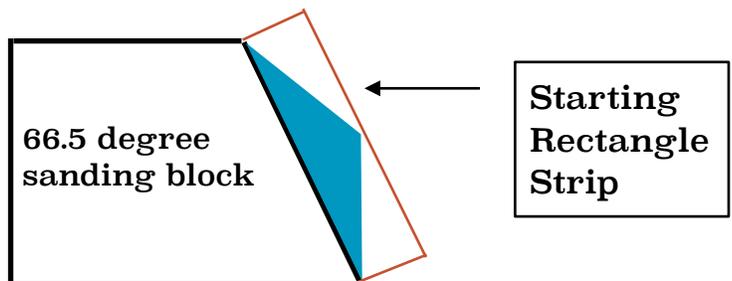
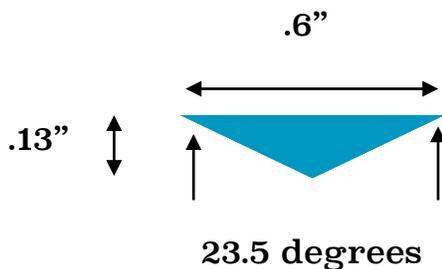
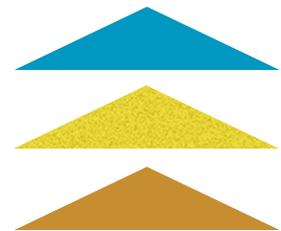


Now that you know the end result for the inlays, I'll review the process I took to get there. This set of segments got a "bit" complicated as the triangles I previously used were simply half of a square (Equilateral Triangle). For this design, I would need one square segment, then a variety of Isosceles Triangles, and some Scalene Triangles. (I had no recollection of the proper names as I started this project, I just had a sketch of the basic design; I knew where I wanted to end up, and learned as I went along)

The final segmented inlay was to be about 2" (l) x .26" (w) x .25"-.5" (h). I would need 2 - 4 of these depending on whether I used a 2, 3 or 4 design blank. These were the general dimensions I was aiming for.



I used an online geometry calculator to determine the dimensions of the Isosceles Triangles. For a height of .13", a long side of .6", the resulting angles needed to be 23.5 degrees. For this I needed to make a sanding block of 66.5 degrees.

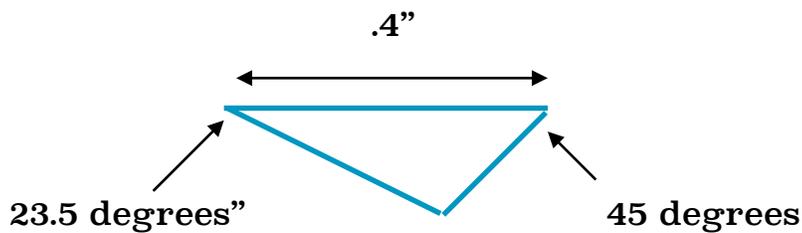


**Yes, It really worked!**

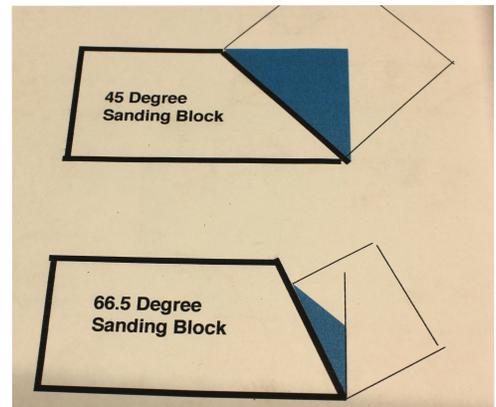


Again, I used an online geometry calculator to determine the dimensions of the Scalene Triangles. For a height of .13", a long side of .4", the resulting angles needed to be 23.5 degrees and 45 degrees. For this I needed to use sanding blocks of 66.5 degrees, and another of 45 degrees... this was interesting.

For these segments, I sanded the rectangles on one side to a 45 degree angle (with the 45 degree sanding block), then sanded the alternate side to a 23.5 degree angle (with the 66.5 degree sanding block). This resulted in the Scalene Triangle I needed. It took far longer to figure out the geometry than the actual sanding.



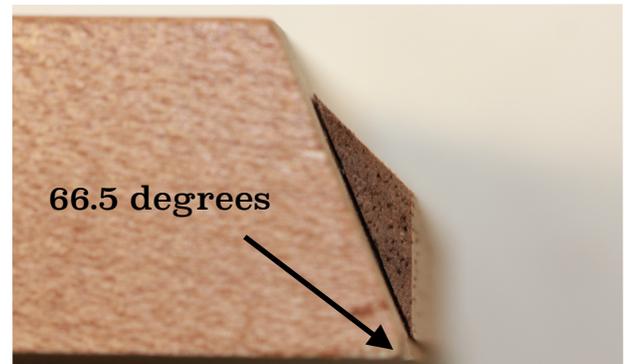
The two sanding blocks



Sanding the 45 degree angle

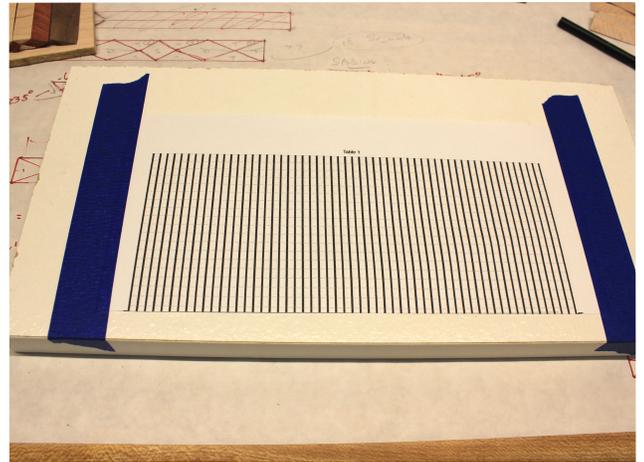


Sanding the 23.5 degree angle

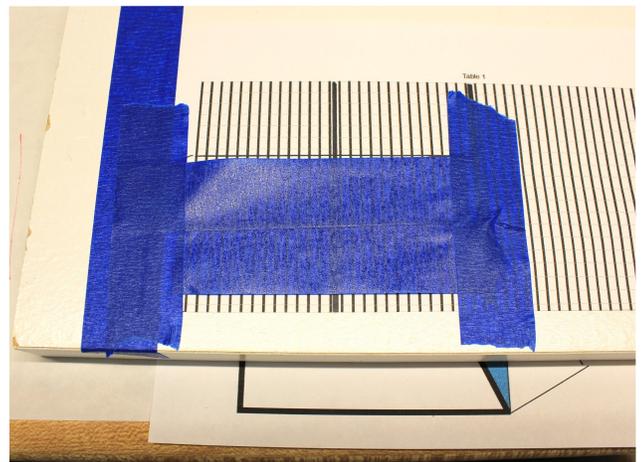


After the segments were cut and sanded to approximate size, here are the steps I used to assemble the inlays and final blank.

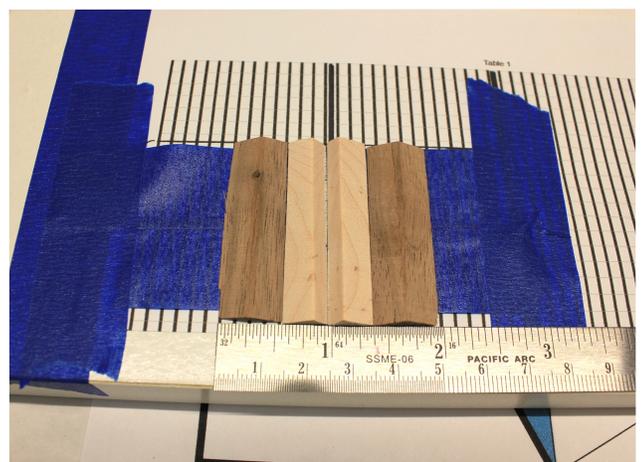
Lay out a grid to assist with alignment. I printed out a lined excel sheet.



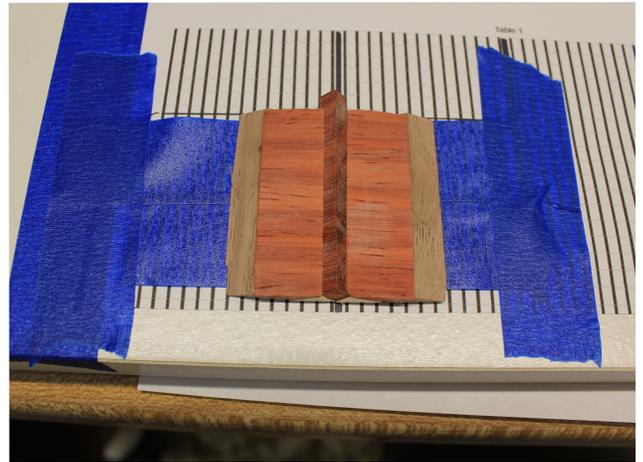
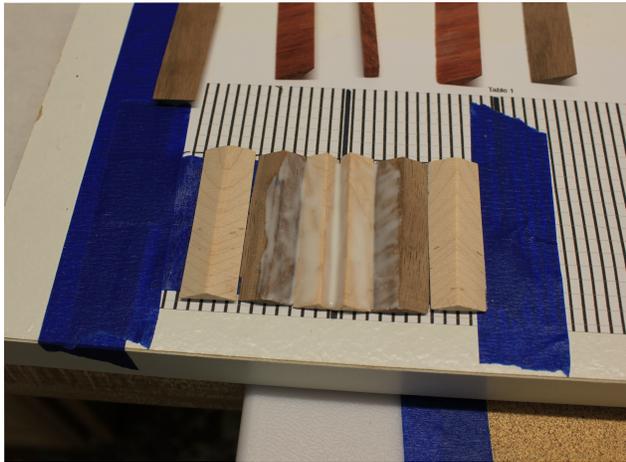
I used blue painters' tape, tacky side up to hold the segments.



Place each segment on the tape, being careful that the top and bottom edges are aligned on the grid.



Continue to add segments. Apply wood glue for each layer, check your alignment, apply pressure to keep the segments flush and inline. (Cross your fingers).



As you glue additional layers and check the alignment on the grid, apply pressure to keep the segments stable.



Each layer will need to be checked for alignment.



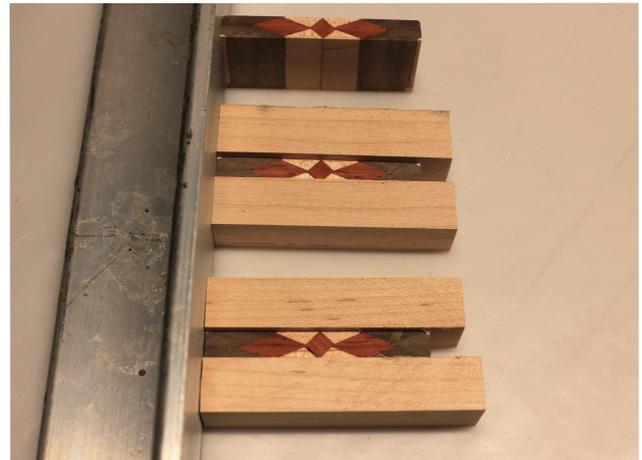
A finished inlay "sandwich" ready to be trimmed. This "sandwich" is about 2" wide, .25" high, and 2 1/2" deep. (I did use this, but eventually didn't like the color pattern; this was the 1'st version).



A set of cut inlays. The top one is 3/4" high, the bottom two are about 1/2" high.



Assembling a 4 corner blank.



Finally getting to turn it.



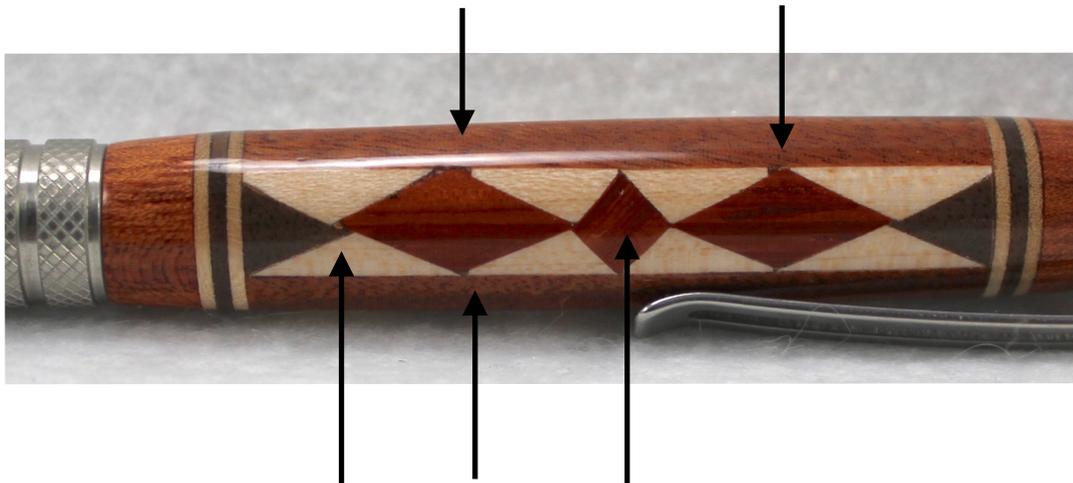
The finished pen - Version 1.



I changed some of the end color combinations, and went with a 3 sided inlay design. I much preferred version 2.



Some self-critique! Segmenting usually includes trial and error, and only through honest self-critique will flaws be corrected in later attempts. Some of these are errors in sanding, others are errors in the glue-up. And the middle square needed to have the grain orientation matching the adjoining triangles.



How can you tell if your end-caps are aligned? A very tight line with no wobble.



Happy Segmenting!