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## Navaho Border Patterns for Segmented Turning Feature Rings by Bill Kandler

You know what they say about idle hands...

This spring, I got to thinking about doing a Navaho border pattern for a new project. I started playing with the cutting angle and make up of the diamond, the width of the slice, and the size of the saw kerf. In doing so, I came to realize that there's an awful lot of variability in the result that comes from being able to change each one of these items. So many were the variations, and the results differed so much from the starting point, that I came to the decision that I needed to put together a model of the process. A model so I could see what was going on. And, when you have a model, you get to make the rules. Did I say rules? No, I meant to say no rules. The border pattern is usually made with a double border. But what would it look like with a single border or a three-part border? Wow! Here are four examples to show what I mean:

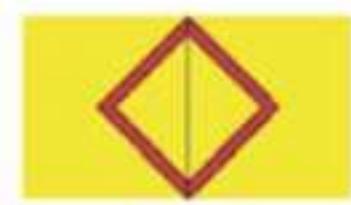
### Starting Diamond Sliced Result



**Figure 1**



**Figure 2**



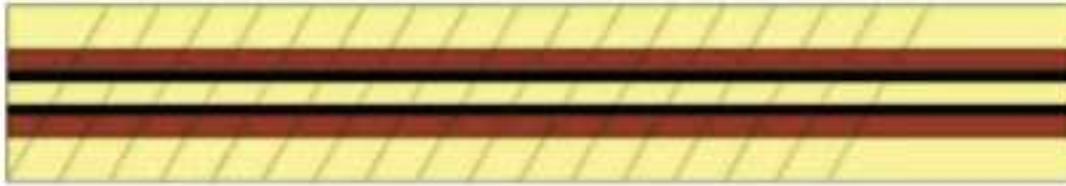
**Figure 3**

Figure 1 is a 30 degree diamond with a double border. The slices,  $1/8"$  thick, are cut with a bandsaw. It results in a kind of snowflake appearance because the inner border color matches the surrounding material. Figure 2 is a 40 degree diamond with no distinct borders; just color and contrast. Again the slices are  $1/8"$  thick and cut with a bandsaw. The result is truly wild. Figures 3 and 4 are 45 degree diamonds with a single border. The border is narrow in Figure 3,  $1/8"$ , while it's  $1/4"$  in Figure 4. So, how does one go about constructing such complex segments? Read on...

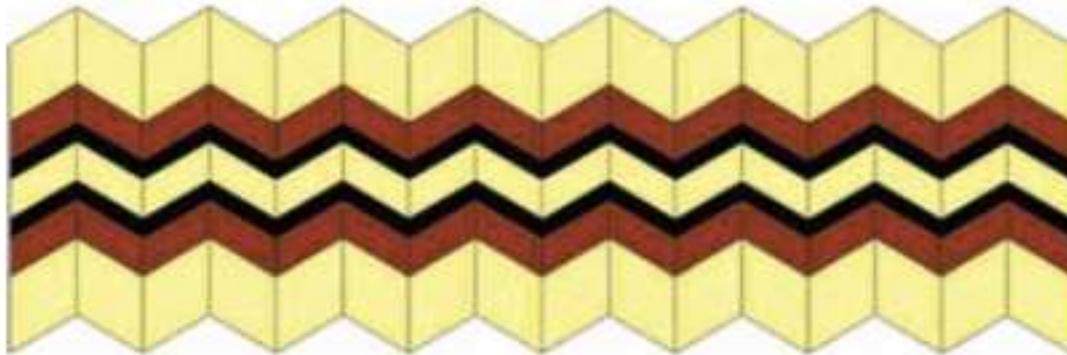
Start by assembling the lamination board. For this step it is important to mill all the stock to the same width, which makes it much easier to get everything lined up. The first wood is the middle, which is then flanked on either side by the next wood, which is then flanked on either side by the next wood, and so on. You should end up with something that looks like this:



Now set up your saw for making cuts at the angle specified in your design. For this one, it's 30 degrees. Also set up a stop block so that all the strips will be cut at the same width. And, be sure the saw blade is 'dead on' vertical. The lamination board needs to be as long as needed for the strips plus some extra for safe handling during the sawing operation. After sawing, you now have this assembly of pieces:



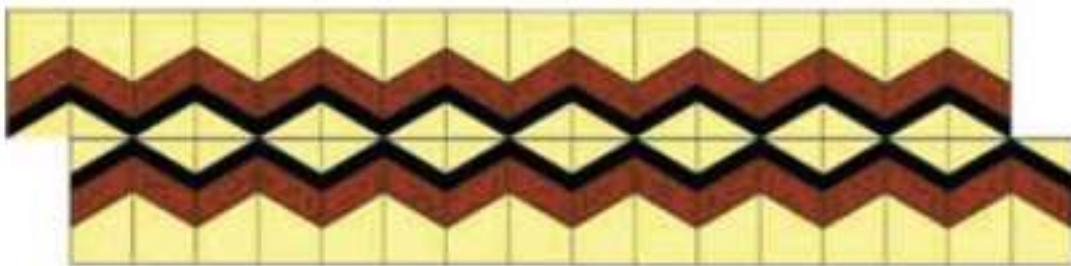
Now take alternating strips and turn them over (left to right or right to left) and you have the Diamond pattern shown below. At the least, you now need to glue the strips into pairs. But for safety in processing, it's a good idea to then assemble the pairs together temporarily using hot melt glue or an equivalent. Do this against a straight edge so you can be sure that all the points line up. If they don't, you won't be able to get the points to line up in the ring you later construct from the Diamonds.



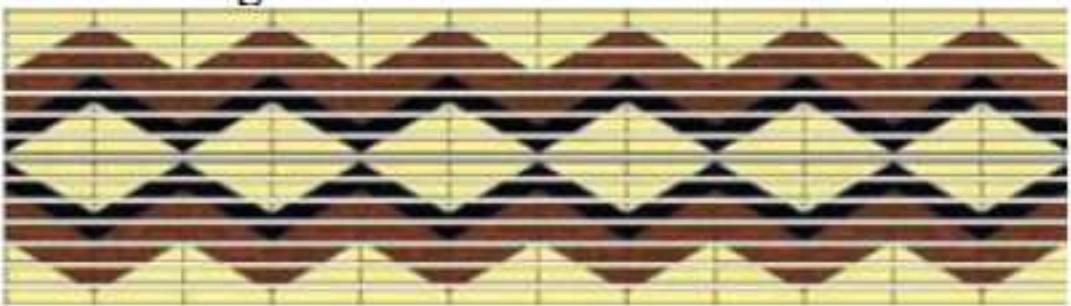
Now you have a set of ZigZags from which you make Diamonds. But first trim off any excess material from the top and bottom of the design.



Now locate the exact center (vertical) of the design and cut the entire assembly into two horizontal halves and slide the top/bottom to the left/right to reveal the diamond pattern. Phew! Now we can finally start slicing.

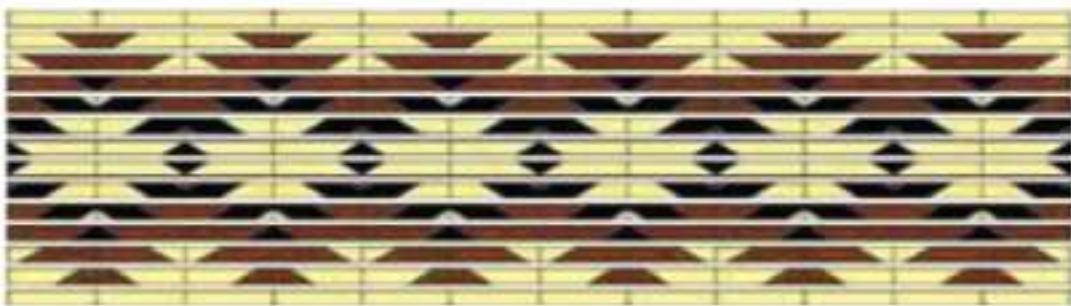


Set up your slicing situation with a sawing fence with the appropriate spacing between the fence and the saw blade. Starting from the center of each half, slice away until you have exhausted the stock. Do this for both the top and bottom halves. Oh!, and keep track of which slice goes where.



Now, flip each slice over, top-to-bottom.

Last step! Carefully glue all the slices together, taking care to keep the pieces vertically aligned. One way to do this is to clamp blocks across the ends of the slices. This will keep things from moving around as you clamp along the strips. You can't use too many clamps for this activity. With a good slicing blade and really hefty clamping pressure, you'll find that there is no need to sand the slices before gluing.



All that's left to do now is make the pieces into segments. That's likely a two step process as you first need to break the glue-up down into segment blocks and then make the miter cuts. The trick here is to be sure that you make the miter cuts so that the two halves of each Diamond unit are identical. Otherwise you won't be able to get the points to line up in the ring. Now, you're almost ready to go off and try this out for yourself. And to make sure you really can, and do it easily, I've created a new designer as a Plug-In for my Segmented Project Planner that does it all with Diamond design, slicing, and detailed construction instructions (you just read them). Want to slice something else? Well, there's also a pure Slicing designer, as well, that helps you to slice virtually anything you can construct.

**About the Author:**

Bill Kandler is an accomplished segmented turner and designer of some Segmented Turning software program. For more information contact:

Bill Kandler

Telephone: (805) 489-5309

Email: [bkandler@segmentedturning.com](mailto:bkandler@segmentedturning.com)

Website: [www.segmentedturning.com](http://www.segmentedturning.com)