

Leonardo da Vinci's Self- Supporting Bridge Project

MACHINING THE 'STICKS'

1. Obtain Material

- See the teacher to obtain wood suitable for this project



2. Cut to Rough Length

- At the Mitre Saw, rough cut the material to ~13" length



3. Joint Face Side

- With the most stable face of the workpiece flat on the infeed table, machine a 'face side'



4. Mark Face Side

- Mark the face side with the appropriate symbol



5. Joint Face Edge

- With the face side positioned against the fence, machine a face edge
- If workpiece is below top of fence, use push sticks
- If workpiece is above top of fence, use 'hitchhiker technique'.



6. Mark Face Edge

- Mark the 'face edge' with the appropriate symbol



7. Plane Parallel Side

- Use the Thickness Planer to create a parallel side to the face side.
- Make minimal passes to achieve this.
- After measuring the thickness of your piece, set the thickness planer no more than 1/16" (1.5 mm) smaller.



8. Re-saw

- Mark a center line down the workpiece on the side opposite the face edge.
- At the band saw, setup a re-saw pin
- With the face side against the table, re-saw the workpiece



9. Plane to Finished Thickness

- Use the Thickness Planer to plane the two boards from the previous step
- Make sure that the flat (face side & parallel side) side created earlier with the Thickness Planer are facing down against the table.
- Plane to a thickness of $\frac{3}{4}$ "



10. Rip to 'ROUGH' width at the Table Saw

- Set fence to 7/8"
- Ensure that the saw is setup for rip cutting and that all safety conditions are being met (ie splitter, push sticks, etc.)
- Rip cut as many pieces as required



11. Plane to FINISHED width

- At the Thickness Planer, reduce the 7/8" dimension in two steps:
 - Do not machine faces that were jointed and thickness planed earlier
 - 1st pass machine to 11/16" (all pieces)
 - Flip boards
 - 2nd pass machine to 3/4" (all pieces)
 - All side should now be machined smooth and should measure 3/4" x 3/4"





12. Cut to Finished Length

- Set up a cross cut boat at the table saw
- Accurately install a stop block (as shown) 12" away from the right side of the blade
- With the workpiece on the left side of the blade, trim the end square
- Slide the workpiece against the stop block (squared end to block) and cut to 12"
- Repeat for all pieces

At no time are you to reach under the guard! Use the workpiece or a push stick to move offcuts as required.



NOTCHING STICKS

<p>1. Layout</p> <ul style="list-style-type: none">• Accuracy is EXTREMELY Important!• Use a sharp pencil• On one 'stick' measure lengthwise to the exact centre (should be 6") and mark this with a single line at the board's edge• Measure from the opposing end of the stick to your mark to confirm you have found centre• Adjust if/as necessary	
<p>2. Drill centre hole</p> <ul style="list-style-type: none">• Drill a centre between two sticks taking careful note of the jiggging arrangement in the picture• Use a board with a fence attached• Use a stop block to make the process repeatable• Clamps – so nothing moves• Clamp – so the two workpieces stay tight together	
<p>3. Drill End Holes</p> <ul style="list-style-type: none">• Without undoing the stop block used in the previous step, insert a 4 3/4" spacer between the stop block and the workpiece• Use the spacing stop block to establish the location for the end holes• Flip each 'notched stick' 180 degrees so that the notches are facing away from each other• Secure workpieces as done in previous step• Ensure centre alignment is still correct• Drill End holes• Flip workpieces end for end and repeat.	<p>No picture yet</p>