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Jointing Techniques and Furniture 1

I declare that the work contained in this submission is my own work and has not been taken from the work of others save to the extent that such work has been cited within the text of this submission.

Signed: _____

Date: _____

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Introduction

As part of the “jointing techniques and furniture module, I was assigned a task to construct a frame whilst also completing a reflective journal, documenting the steps taken and my thoughts and learning from the process. The purpose of this is to give me the opportunity to reflect on my experience of constructing the frame and identify areas of personal learning.

This report begins by giving a detailed description of the sequence of events involved in constructing the frame, which I composed prior to commencing work on the frame. I then offer a detailed daily diary documenting my experience as I progressed through the sequence of steps.

As part of my reflective practice, I have included a time chart, which identifies the estimated time frame within which I hoped to complete the construction of the frame, as well as the actual time taken. A cutting list is also presented, identifying the length, width, thickness and type of material used.

This report discusses several key tools used in the construction of this frame, including a band saw, mortiser, table saw and spindle moulder. The health and safety components associated with the use of each individual type of machinery are discussed.

This report then concludes by offering a reflection on my experience of this process, identifying the areas that I felt offered me most learning and gave me the opportunity to further my knowledge and skills.

Sequence of events

1. Check timber for defects including knots, splits, cracks and warping
2. Mark Face side & edge of the 5 pieces of timber to reduce confusion when cutting
3. Measure the length of each of the 5 pieces.
4. Mark out mortises for the top rail the whole way around and the middle mortise just on one side
5. Mark out tenons for top rail with correct shoulder and tenon length
6. Drill the 8 holes for the dowels with the doweling machine(Bottom rail)
7. Mortise out the bridle joint and mortise middle rail. Keeping face side against the machine fence
8. Cut the cheeks of the tenons with Japanese pull saw ensuring not to cut below the line.
9. Score the shoulders with a Stanley blade
10. Remove a channel and cut
11. Offer up the mortise and tenon and pear for a snug fit if necessary
12. Mark out the rebate and use the spindle moulder to remove
13. Offer up the mortise and tenon to ensure good fit with the rebate removed. Pear if needed.
14. Mark out mitres with the block
15. Trim shoulders for mitres so the joint closes properly
16. Cut Mitres with 45 degree block ensuring not to remove too much material as the mitre will be left open
17. Fit together without glue, ensuring everything fits.
18. Dry assemble with cramps and check for square
19. Sand individual components to remove pencil marks and smoothen rough areas.
20. Assemble and cramp with glue. Remove excess glue while wet.
21. Trim tenons and waste material

Detailed Diary

Day 1 20th Oct

I selected the five pieces of timber needed to make this frame. While doing this, I took into account possible knots or defects that might be present. Once satisfied with my wood, I then marked my face side and face edge with the “triangular technique”.

I then began marking the overall length needed. I worked out the shoulders for my top rail (274mm) and shoulders for my middle rail (274mm & 262mm).



Day 2 3rd Nov

I marked the 3 joints on both rails. I started with the bridle joint (Figure 1), coming down 44mm and back up 6mm to allow for the mitre joint. I then marked out the overall width of the middle mortise and came back up and down 6mm for the actual size. I had to take into account that the rail had to be a set distance of 210mm from the top rail. I set my mortise gauge and marked my bridle joint and mortise & Tenon. When I had everything



marked, I used the doweling machine to bore out holes in the bottom rail.

Figure 2

www.canadianwoodworking.com

Day 3 10th Nov

I started by setting up the mortise machine. I placed my piece face-side into the machine and lined it up with the cutter and marks on the piece. When I had cut half way down through the bridle, I turned the piece around keeping the face-side against the fence. I proceeded to bore the rest of the material out. The middle only needed boring on one side (Figure 2), but this didn't go the whole way through. The next job was to cut the tenons. For this, I opted to use the Japanese pull saw to cut the cheeks. I then used a Stanley blade to score the cheek lines, followed by a chisel to cut a channel out. This gave me a clean crisp cut. This was repeated for the other 3 tenons. I then started to clean up the cheeks of the tenons using a chisel to ensure a good fit.

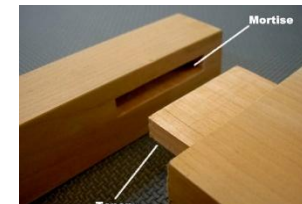


Figure 1

www.bobvila.com

Day 4 17th Nov

I cut the length of my tenons on the middle rail to size. This let me close the joints so I could mark my Mitres on both top and bottom rails. I used a 45 degree block to mark these. I then used a chisel to removing the shoulder before trimming the mitre. I tested the fit and trimmed 1mm off to allow closure. The piece was sanded to remove any pencil marks. It was then dry assessed before I could glue it.

I done a dry assemble first with all cramps in place. This gave me an opportunity to test the piece for square and also to see if both sides of the joints closed. Once happy, I applied glue and cramped the frame, making sure to remove excess glue, before it dried, with a damp cloth. Once dry I gave the frame another sanding to remove any more excess glue and trimmed the tenons and waste material.



Dowel Joint

www.canadianwoodworking.com

Time Chart

Task	Estimated Time	Actual time			
Inspect timber for defects	2	2			
Mark Face side & edge	3	2			
Measure and mark over length of frame	5	5			
Mark out mortises for top and middle rail	30	25			
Mark out tenons for top and middle rail	30	24			
Drill dowels with the doweling machine(Bottom rail)	10	6			
Mortise out the bridle joint and mortise middle rail	25	15			
Cut the cheeks of the tenons with jap saw	20	17			
Score the shoulders with a Stanley blade	8	5			
Remove a channel and cut	5	3			
Offer up the mortise and tenon and pear for a snug fit	25	40			
Rebate with spindal moulder	10	6			
Offer up the mortise and tenon to ensure good fit	2	5			
Mark out mitres	10	20			
Trim shoulders for mitres	30	20			
Cut Mitres with 45 degree block	15	10			
Fit together	15	5			
Dry assemble with cramps	15	10			
Check for square	5	3			
Assemble and cramp with glue	20	15			
Total	285	238			
	5 Hours	4 Hours			
Cutting List					
No	Length	Width	Thivkness	Material	
2	550	45	22	Red Deal	
2	370	45	22	Red Deal	
1	30	80	22	Red Deal	

Health and Safety – Power tools

Bandsaw

- The operator of the Bandsaw should always use proper eye protection
- Hands must be kept a safe distance away from the moving blade.
- Make sure all guards are in place and properly adjusted. Ensure all band wheels are enclosed.
- Adjust blade guard height to approximately 3 mm or 1/8 inch above the top of the material being cut.
- Ensure the blade is tracking correctly and runs freely in and against the upper and lower guide rollers.



blue-gum-hills-mens-shed.com

Mortiser

- The operator of the Mortiser must wear safety goggles
- The operator must ensure the piece is clamped and secured into place before the work begins.
- It is important to ensure hands are a safe distance away from the cutter at all times
- Double check the cutter is secured in the chuck and that the drill-bit is in perfect working order.(ie sharp)
- Don't bore out all the material in one cut



www.machinemarket.co.uk

Table Saw

- This machine produces large amounts of dust so extraction is necessary.
- The operator should be careful of kickbacks. This can occur when the blade catches the piece and violently throw it back towards the operator.
- You must use a push stick rather than placing hands too close to the blades.
- Always make sure the fences are set to the correct position and that they are secured.
- Always isolate the machine before changing the blade.
- Make sure the blade is running freely and up to speed before any cutting starts.



Spindle moulder

- The operator should always wear eye protection when using this machine as wood chipping can be present
- Ear plugs should always be worn as this machine can generate a lot of noise when in use.
- Make sure all fences are secured including feather boards.
- Never pass your hands in front of the cutter and always keep them a safe distance away. Use a push stick or block where necessary.
- Always pass the piece from right to left.



www.thesawcentre.co.uk

Reflection

In reflection, I am satisfied that the process I underwent in making this piece has contributed positively to me developing my skills and knowledge in the area of furniture design.

The first difficulty I encountered was in establishing my shoulder lengths, specifically regarding coming down 44mm and back up 6mm to allow for the mitre joint. This was a technique I did not have experience of and I initially practised it on my practice frame and recognised that I had not measured it correctly for cutting. This highlighted the importance of precision and accuracy which I carried forward in making the frame.

As I progressed through the steps listed in the sequence of events. At one point in the process, I used the incorrect drill-bit in the machine when cutting one of the mortises for my piece. I had to correct this by using an alternative piece, against strengthening my understanding of planning and precision in the process.

Having devised the estimated/actual time chart, I recognised the benefit of this in the production process and feel this is something which I will gain further skill in as I continue to use this procedure in future pieces.

List of references

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http://www.dlsweb.rmit.edu.au/lsu/content/2_AssessmentTasks/assess_tuts/reflective%20journal_LL/index.html