Student's Name:

Andrew Tighe

Student Number:

Dublin Institute of Technology

Faculty of the Engineering and Built Environment

School of Construction

Dept. of Construction Skills

Bachelor of Technology in Timber Product Technology

Course Code:	DT169
Academic Year:	2014/15
Semester:	1
Module:	Joint techniques
Lecturer:	Jennifer Byrne
Year:	First Year

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:_____

Contents

Introduction

My brief was to manufacturer a window frame.

Planned sequence of events

My sequence of events during my projects:

- Inspect timber and choose the best pieces avoiding knots and defects.
- Mark face sides and face edges insuring that any knots or defects will be not in the way of manufacturing
- Mark the bottom rail off to length as it has to be square for the dowel machine to bore the holes into (no waste required)
- Mark out height of middle rail and top rail on the outside rails.
- Mark out shoulder for tenons on top and middle rails adding 6mm first to allow for mitre joints
- Then get the mortise Gauge and mark out where the mortises are going on the two outside pieces for the top rail and middle rail but you are only going in so far in the outside pieces for the middle rail as you come in 12mm from the side of the piece.
- Mark out mortises for top rail's bridle joint.
- Cut bottom rail to exact length ensuring square ends.
- Use dowel joiner to drill holes in either end of the bottom rail, and the bottom of each style.
- Mortise out the mortises for bridle joint and mid rail's stopped tenon.
- Clean out mortises and then cut cheeks and shoulders of tenons.
- Clean tenons and fitted them to their mortises.
- Put the frame briefly together to see does the tennons fit properly together.
- Then use spindle moulder to cut a rebate on inside edges on the back of each piece.
- Then use the router to rebate out the smaller ones on the front of your piece
- Then mark out your mitres to where there going on the timber
- Next step is to cut all of the mitres using a mitre block and cut them with a chisel.
- Then fit the frame together to make sure the frame goes together properly
- Take it apart and sand the entire pieces using (1/half) (1) (0) grit sandpaper in that sequence
- Glue the frame together making sure it fits together nicely and most of all its square
- Then when it is dried and ready to work with give it another quick sand ensuring all sharp edges are gone and all glue stains are aswel.

Machines used during manufacturing

Multi-Borer

Safety Precautions and How to use the machine notes when using Multi-Borer:

When I was using the Multi-Borers for this project there were a few safety precautions to follow

- Adjust air clamps to within 3-5mm of height of work piece avoid finger from clamps when operation.

- When securing piece on the table with clamps hands should not pass between piece and fence of machine and if needed another piece should be held against original piece to apply pressure.
- Hands also should not be in the path of bits in case the bits come fully through the piece due to operator's mistake in depth setting.
- Face side always down to ensure pieces will always be aligned even if joiner bits are not centred.
- Finished end should be placed against end fence to give exact location of holes is the same on both pieces

- There is more to learn about this machine than other machines I personally feel that there can be a lot can go wrong with this machine if not used properly.

.

Spindle moulder

Safety Precautions and notes on how to use the spindle moulder.

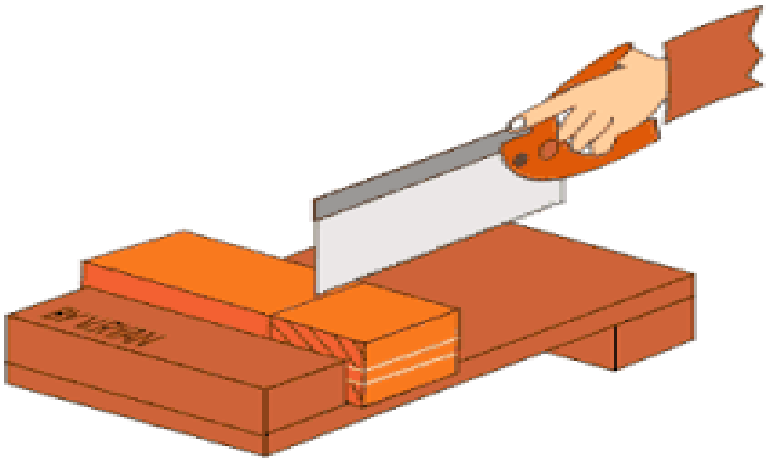
This was my first time using this machine and I did not know what to expect but I found it okay to use once you follow the correct safety precautions

- Before running piece through spindle always make sure the fences that are set up on the machine are going to hold you piece tightly enough that you can still pass your piece through.
- Goggles must be worn when using the spindle and loose clothing should not be worn or tucked in.
- A guide block or push stick should also be used when using the spindle.
- Spindle should be as enclosed as much as possible and a false fence should also be used when applicable to lessen the chance of any injury

Tennon Saw

The safety precautions with this is fairly simple and how to use it.

- Keep hands away from the blade while cutting at all times
- When cutting timber with this make sure your cutting straight at all times how you do this is you put your finger in the handle and your take your index finger and put it straight out along the handle and start cutting slowly as shown in the picture below.



Belt Sanders

Safety precaution and notes on how to use the machine

- When sanding a piece watch that it does not fly off the belts and hit someone keep a tight grip at all times.

- Also keep hands clear of the belts while moving cause they will do serious damage to fingers

- When you're using the sander keep the timber moving with the belts for a smoother finish

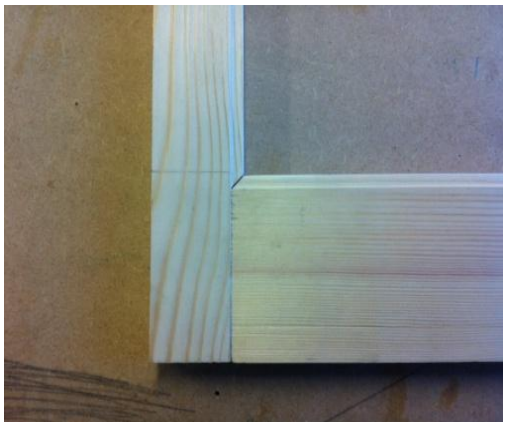
Timing sheet of each step in the project

Procedure	Estimated Time	Actual Time
Inspecting timber and marking face side face edges	1min	1min
Start marking out timber to size leaving waste at the top	15mins	20mins
Mark out the length of tennons mortises	20mins	20mins
Mark out to wear the dowels are going to go on each piece	15mins	12mins
Then go bore the dowels on the multi borer	5mins	3mins
Cut tenons cheeks and shoulders	35mins	45mins
Fit mortises and tenons together to make sure they fit	40mins	30mins
Use spindle moulders to rebate the back	10mins	7mins
Use router table to rebate the smaller one at the front	10mins	7mins
Then mark and cut your 45 mitres and make sure they go together neat and tidy	50mins	55mins
Sand down all the pieces of timber	1hr	50mins
Glue up the frame and let it dry	1hr 15mins	1hr
Sand it again to take off any glue patches on the timber	20mins	14mins

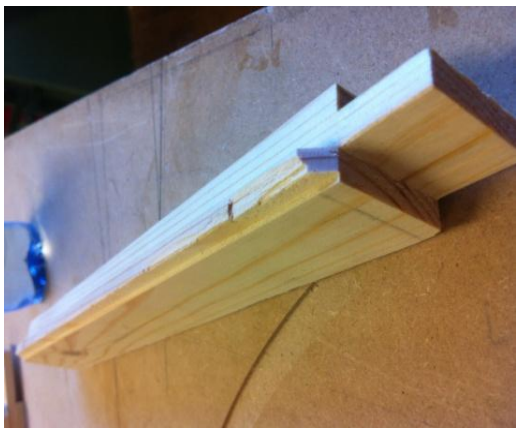
Reflection on finished project

When I Looked back over my sequence of events and the estimated times I made before hand for planning out the project. I was very happy with the plan I set out and followed mostly throughout the project. The next project that I will be making I will have a better idea of what to expect and to do and how long it will take to make the tennons and cut out morticers ext. Which I felt I wasted a lot of time on by leaving too much waste on tenons and having to do a lot more shaving to fit the tenons.

There were a few things that I wasn't as happy with as I would have liked to be such as:
The bottom rail which finished with two small gaps between the mitre joints due to my fault in removing to much material. But luckily I was able to squeeze the mitres in with the slash cramps.

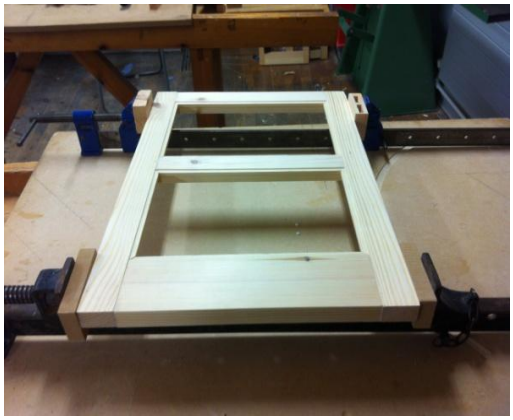


Also when I was doing the small rebate on the front of the rail on the router table. When I was done it left the rebate very rough so I had to do a lot of sanding to get it back smooth again.

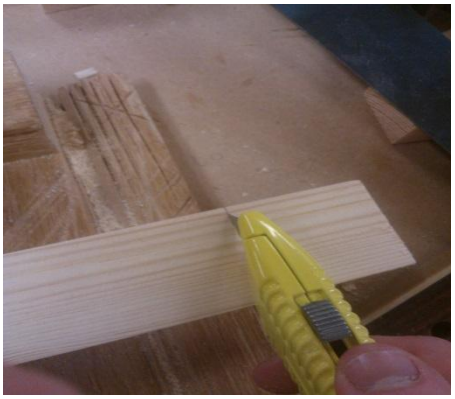


Picture 1

Picture 2



Picture 3



Picture 4

Contents