



# Lohr School of Woodworking Advanced Joinery Course Guide

Welcome to your Advanced Joinery course! This guide is meant to help you through this week's class. Completing this project is a huge undertaking in your six days with us. Be sure to review the goals for each day to manage your time and keep yourself on track. If you feel like you're slipping behind, don't hesitate to ask us to help!

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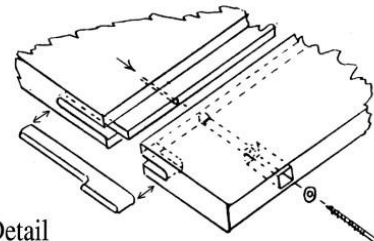
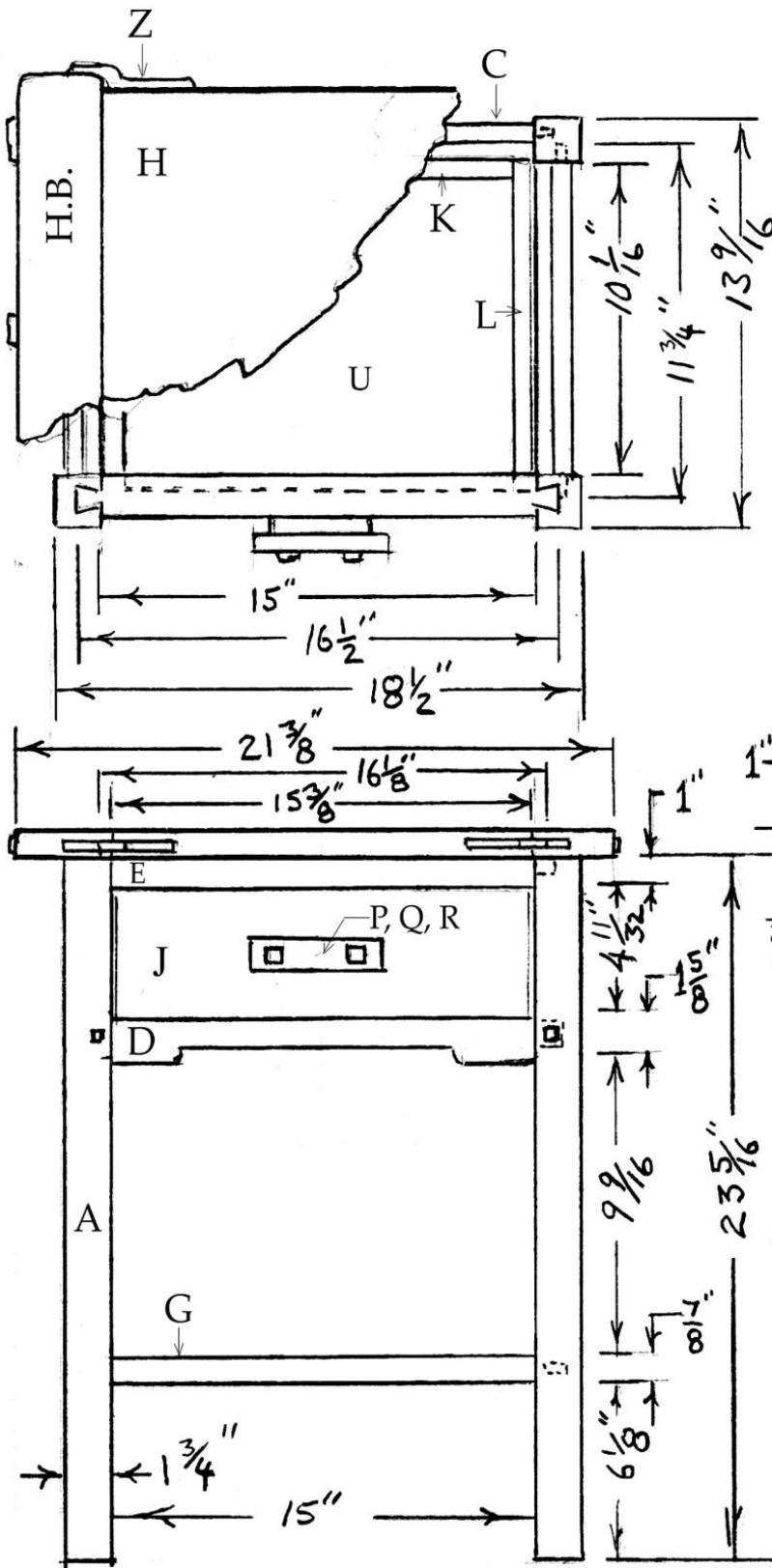
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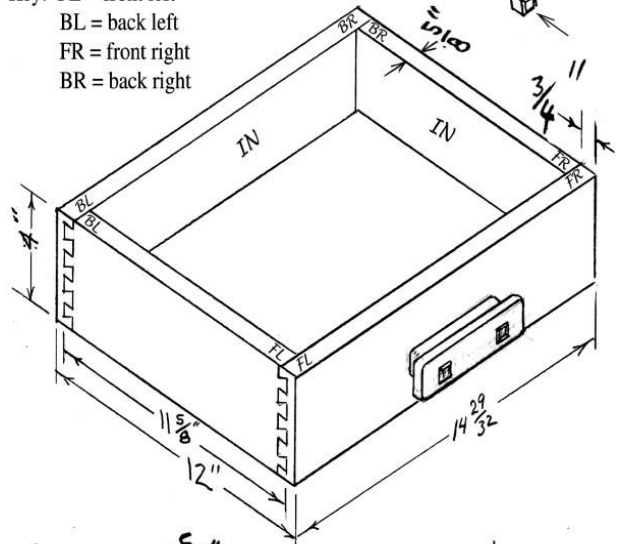
# J.D. Lohr Advanced Joinery Course

## Accessory Table Shop Plan



Drawer Detail

Key: FL = front left  
 BL = back left  
 FR = front right  
 BR = back right

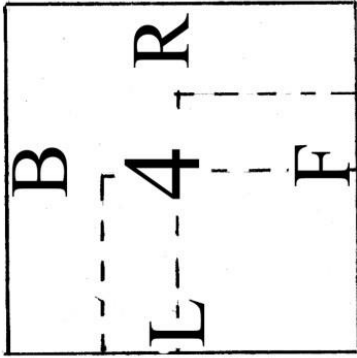
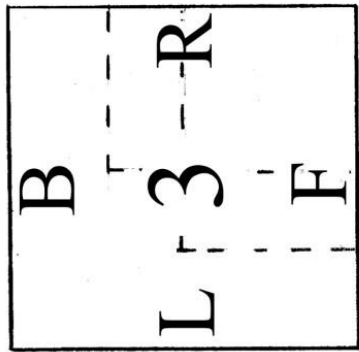


M = Drawer slide rail  
 N = Drawer side spacer

J. D. Lohr Woodworking Advanced Joinery Class Project Bill of Materials.  
Lohr /Greene and Greene Style Mixed Wood  
**Accessory Table Bill of Materials**

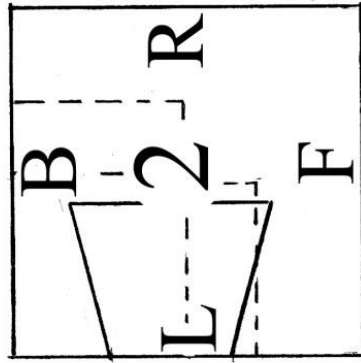
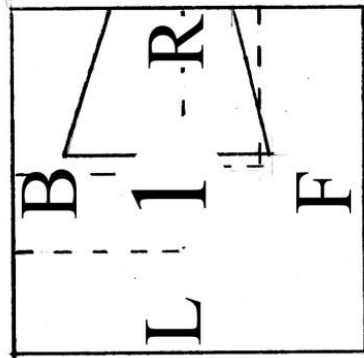
Letter	Part Description	#.pcs.	T"	W"	L"	Material	Notes
A	Legs	4	1 3/4"	1 3/4"	23 5/16"	Walnut	
B	Side Skirts	2	3/4"	7 1/4"	11 9/16"	Walnut	
C	Rear Skirt	1	3/4"	7 1/4"	16 1/2"	Walnut	
D	Front Lower Stretcher	1	3/4"	1 7/8"	16 1/2"	Walnut	
E	Front Top Stretcher	1	1"	1 1/2"	16 1/2"	Walnut	
F	Lower Shelf Br.Bd.End	2	7/8"	1 1/2"	11 9/16"	Cherry	
G	Lower Shelf	1	7/8"	12 1/2"	15"	Cherry	
H	Table Top	1	1"	15 1/4"	16 1/8"	Cherry	
H.B	Bread Board Ends	2	1"	3"	15 5/8"	Cherry	
J	Drawer Front	1	3/4"	4"	14 15/16"	Cherry	
K	Drawer Rear	1	3/4"	4"	14 15/16"	Poplar	
L	Drawer Sides	2	5/8"	4"	11 5/8"	Poplar	
M	Bottom Drawer Runner	2	7/8"	1 5/8"	10 1/16"	Walnut	
N	Drawer side spacer	2	11/16"	7/8"	10 1/16"	Walnut	
Z	G & G shaped Spline	4	5/16"	7/8"	5"	Walnut	
P	Drawer Pull Front	1	1/2"	1 1/4"	5"	Walnut	
Q	Drawer Pull Strut	1	5/8"	11/16"	4"	Walnut	
R	Square Pins	8	1/2"	1/2"	5/8"	Walnut	
S	Rectangular Pins	4	1/2"	7/8"	5/8"	Walnut	
T	Small Square Pins	14	5/16"	5/16"	7/16"	Walnut	
U	Drawer Bottom	1	1/4"	11 3/16"	14 1/8"	Poplar	
V	Screws	12	#8		3"	Brass	
W	Washers	12	#6				

Shop Notes:

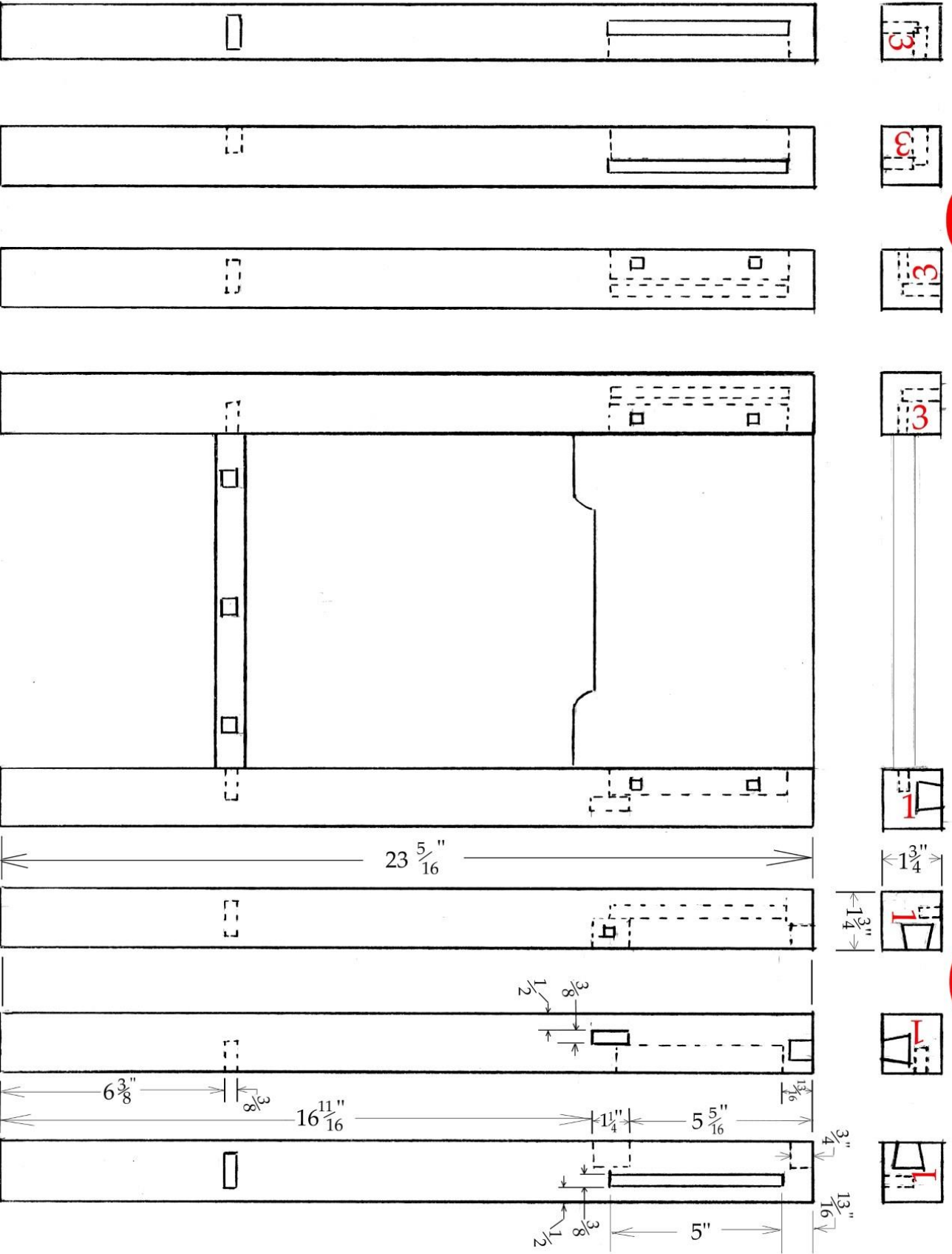


## Accessory Table Leg Detail

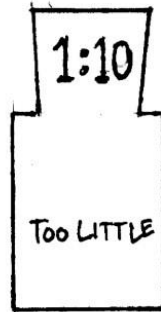
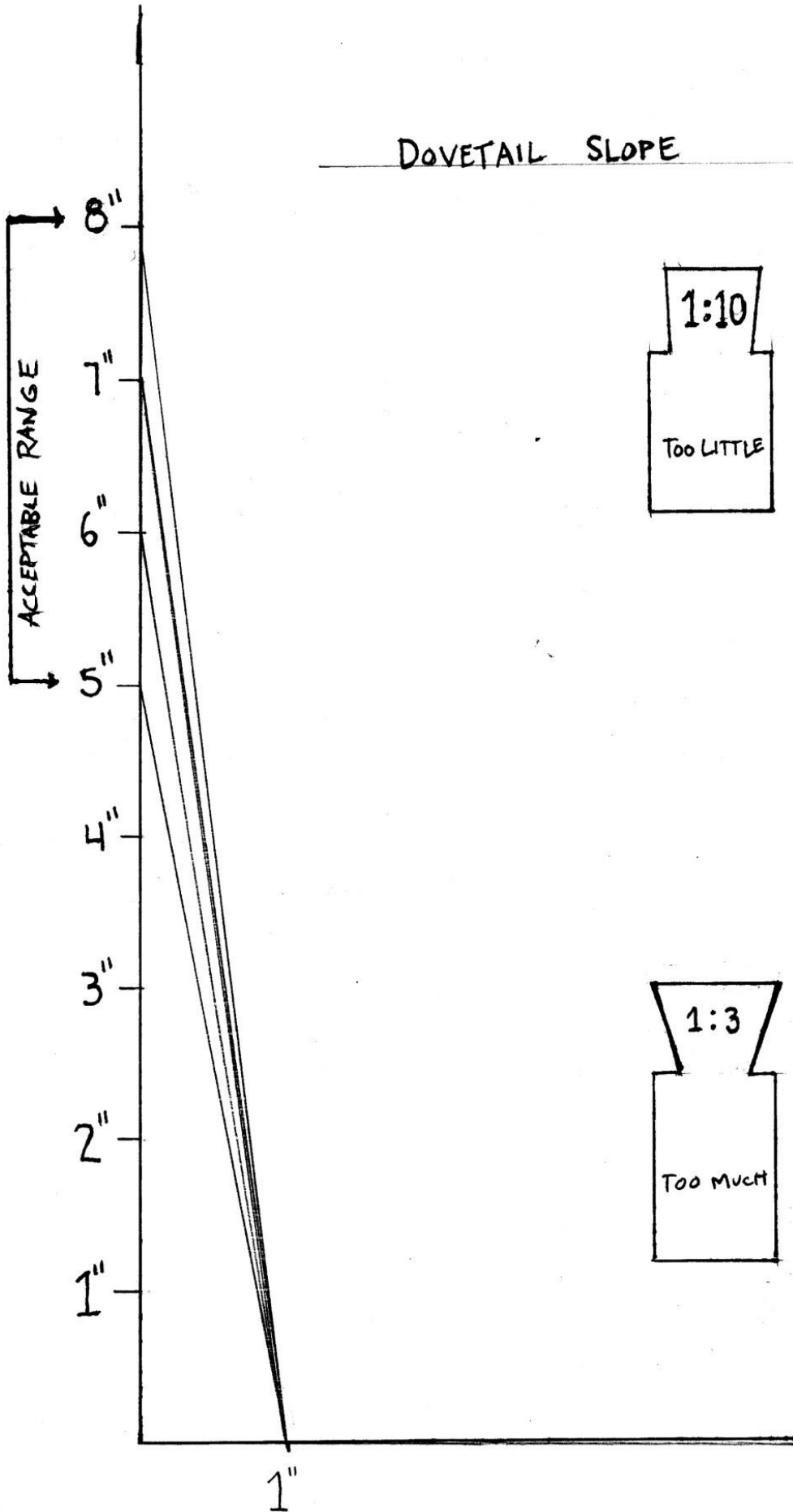
Key: F = front, B = back, L = left, R = right



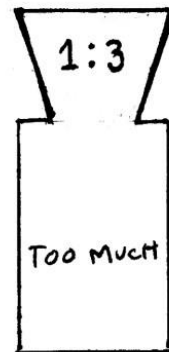
# Lohr Woodworking Advanced Joinery Course -- Accessory Table Leg Layout



# DOVETAIL SLOPE



THIS SLOPE DEFEATS  
THE MECHANICAL  
NATURE OF A  
DOVETAIL JOINT

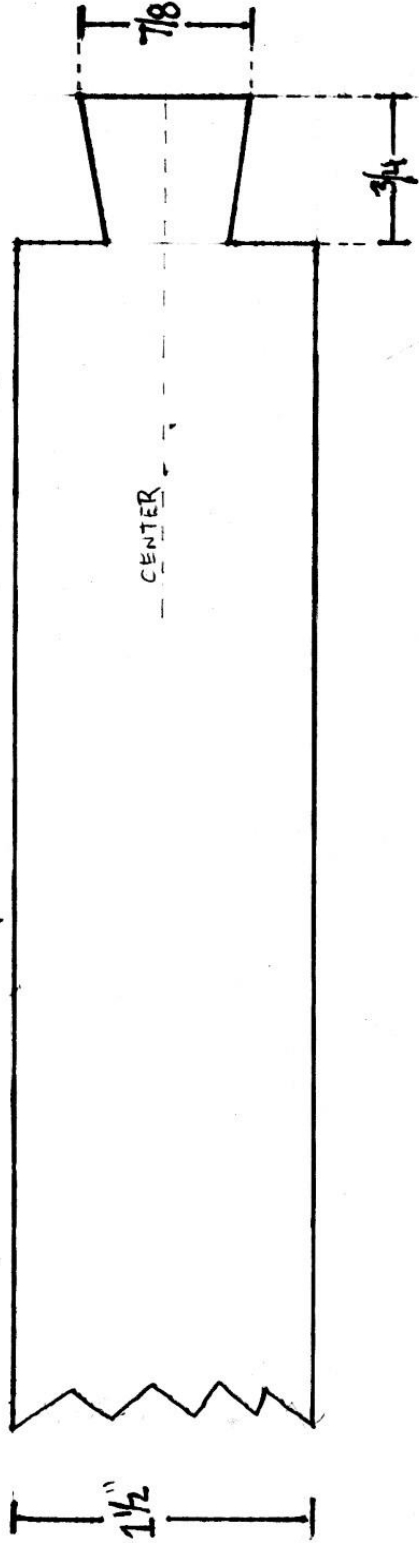


THIS SLOPE CREATES  
SHORT GRAIN ISSUES  
WHICH WEAKEN THE JOINT

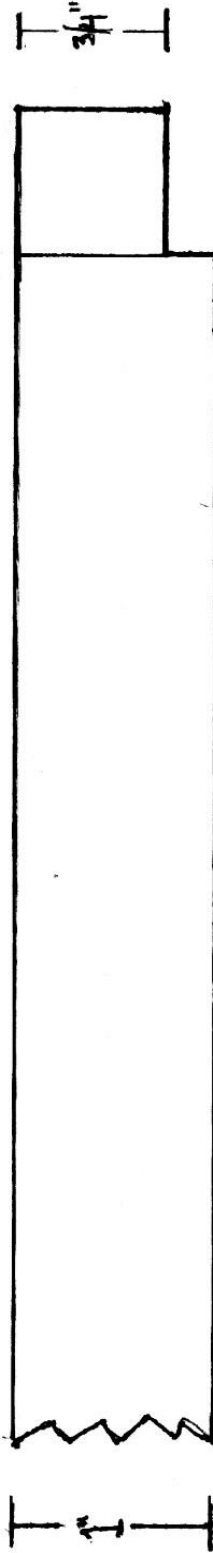
UPPER RAIL DOVETAIL LAYOUT

DOVETAIL SLOPE  
1:5

TOP VIEW



SIDE VIEW





# Monday

Introduction: Brief presentation about history of Arts & Crafts furniture as it relates to this project

## Layout:

First, determine the position of the legs in the project. You want to show the attractive faces and hide knots, defects and sapwood. Pay special attention to the grain on legs 1 & 2. This grain should be straight and unconfused as we'll be hand-chopping dovetails into the top.



Use the story stick to layout your mortises on the legs.

Use a pencil with a fine point to transfer the dimensions from the story stick onto the legs. Make bold squiggle marks inside your layout lines. Consult the plan to ensure that your mortise layout is correct. It's also a good idea to consult our model table if it helps you to get a look in three dimensions.

*Note:* Story sticks are a great way to accurately record your joinery for future projects. If you've made a design that you think you'll repeat, take the time to make a story stick to save yourself time later.

## Cutting Mortises:

There are three separate mortising set ups-

- (1) Use the plunge router with the stop jig to cut the long mortises. Be sure to check the router setup against your layout lines. The final depth of the mortise is  $7/8$ " to accept a  $3/4$ " tenon. Make three passes, using each step of the plunge router depth stop.
- (2) Use the bench top mortiser to cut the mortises between legs 1 & 2. There is a stop block that will help you register the mortise in the correct place.
- (3) Use the stationary mortiser to cut the shelf breadboard mortises. Place the bottom of the leg against the stop and clamp it in place. Use the hand-wheel crank to cut to your layout lines. Cut the beginning and the end of the mortise first, then clear out the waste in the middle.

## Cutting Tenons:

The fence is set to cut a  $3/8$ " x  $3/4$ " tenon. Register the end of the board against the sacrificial fence and hold the work piece down firmly through the cut.

*Note:* It's always helpful to use a sacrificial fence in tandem with the miter gauge when cutting tenons on wide stock. If you don't, the force of the dado stack will tend to push the workpiece away from the blade, resulting in a sloppy shoulder cut.

Don't adjust the height of the blade. A perfect fit right off of the machine is something we strive for, but rarely achieve on 100% of our tenons. You will fine tune the fit by hand at your bench.





Cut both faces first, then put the piece on edge and cut the shoulders with the same setup. Apply the same pressure against the fence for each cut so create a consistent shoulder all the way around. Cut all of the tenons except for the shelf breadboards with this set up.



Determine the orientation of the top rail. Cut a rabbet on the underside, registering the end of the piece against the sacrificial fence.

### Fitting Tenons:

Determine the layout of your skirt boards and label the end grain with the number of the leg it corresponds to. Look to hide defects, tear-out, and sapwood where possible. Favor placing straighter grain toward the bottom for a more successful cloud lift detail.



At this point, the tenons are too wide to fit into the mortises. Begin fitting them by making layout lines on the tenons. The top edge of the skirt board will be flush with the top of the leg. Align the tenon over the mortise and make your layout marks allowing for 1/8" of extra space above and below the tenon.

Do not cut the shoulders of the front lower rail. We will be ripping the piece in two to establish the cloud lift. The kerf of the blade will reduce the width of this tenon. If you trim it beforehand, the width of your tenon will be too short.

- Use a handsaw to cut to your layout lines. Try to stay away from the shoulder by 1/16" on your crosscut. You will pare this raised portion flush to the shoulder with a 1/2" chisel.
- Once all of the wide tenons have been cut, you can use a shoulder plane and cabinet scraper to establish the final fit into the mortise. Use the bench hook provided to you for easy manipulation of the pieces on your bench.
- Dry-assemble the pieces and marvel at your progress.

### Shelf Assembly:

Determine the orientation of the shelf assembly and mark the pieces on the end grain with the number of the leg they correspond to.

### Cutting the Tenon:

- Cut the faces first and then the shoulders. Use a spacer underneath the outer edge to offset the tenon.
- The tenons should be fit to the mortises so that the inside edge of the shelf breadboard is flush with the plane of the leg.

### Square Piercings

- Sand the outer edge of the shelf breadboards to 220, then lay out the ½” square piercings according to the plan. Use the stationary mortiser to cut the ½” square piercings.
- Drill holes through the center of the ½” square piercings at the drill press. To accommodate expansion and contraction, drill a ¼” hole on the outer squares and a 1/8” clearance hole in the center squares.



### Biscuits

- Make a center line across the width of your shelf board and a center line along the length of your bread board. Align the two and layout lines for the #20 biscuits.
- Each biscuit layout line should be 2 ½” from the shoulder of the breadboard tenon. With the two center marks aligned, transfer the biscuit lines over to the face of the shelf.
- Cut the biscuit slots into the breadboards and the shelf with the biscuit joiner. With all of the layout lines, it's easy to accidentally cut a slot into the center. Don't do that.



### Attaching the breadboards to the shelf

Make layout marks that go through the center of the clearance holes on the shelf breadboard. Align the shelf and the breadboard on center, then transfer the marks over to the end grain of the shelf. Drill a pilot hole in the center of the thickness for a #8 2” screw at each position. Wax the screw, add a washer and connect the pieces with just the center screw. Be sure the biscuits are installed.



Choosing a pilot bit for your screw: A pilot hole helps a screw to drive into the work piece by clearing out some of the waste material. A pilot hole should be the diameter of the screw's shank. Only the threads should catch. If you aren't sure that you've got the right bit, drill a hole in some scrap wood and try it out.

## Monday's Goals for the Day!

- Mortise and tenon joints cut and fit
- Shelf assembly laid out and underway



About our Goals for the Day: You should aim to meet these goals to the best of your ability. If it seems to be a struggle, please ask one of your instructors to help you out.



# Tuesday

## Cloud Lifts:

Start by marking your skirt board pieces at the bottom. Draw a small cloud lift in chalk and number both the cloud lift bit and main face of the skirt pieces. You will be ripping these apart, so it's imperative you get the pieces back in the same orientation for a good grain match.



## Ripping

Set the rip fence on the table saw to 9/16". Register the bottom edge against the fence and rip the piece. Immediately place the piece back with its mate. Rip all three wide skirt boards and the front lower rail. Test the pieces to see if the joint closes. Focus on the ends, if there is a bow in the piece it may not make a difference, as we'll be cutting the two ends to a short length.

- If everything closes nicely, you can bypass jointing the pieces.

## Jointing

If the joints don't close perfectly, you can joint the edges *before* the pieces are cut to length.

- To joint the short skirt boards place them both together in the holding jig and joint the two in one shot.
- To joint the small 9/16" cloud rips, use the monster push stick jig.
- The longer wide skirt board can be jointed as normal.



## Crosscutting

Once all of the pieces mate nicely, cut the length of the clouds to 2 1/2". Set the fence to 4 1/2" and use the 2" stop block to provide clearance between the blade and fence. **Be sure to register the front lower rail cloud against the shoulder and NOT the tenon.**



## Shaping

After cutting the pieces, assemble them all back with their mates. Trace the radius of a nickel onto the cloud pieces and shape them at the disc sander. Clean up the sander marks with some 180 grit paper.

## Glue Up

Use the melamine glue up jigs to glue the clouds onto the skirt boards. Wipe a coat of Johnson's Paste Wax onto the jig to keep glue from sticking to the jig. Do a dry clamp to find the appropriate amount of wedges to close the joint.

Apply a light coating of glue to the clouds only. Press in place for 20 seconds, then engage the wedges. Check that the cloud is aligned with the shoulder before moving on.

Don't worry about cleaning up squeeze out just yet. We don't want to introduce water to the joint. Let the glue set up for about 45 minutes, then pare it off with a chisel.



## Fitting the Lower Front Rail:

When the glue has dried on your cloud lifts, we can fit the lower front rail to its mortise. The drawer opening has to be a fixed dimension and you've got some spacer blocks that establish this size. Align the upper rail flush with the top of the leg, place the story stick in between the upper and lower rails, and mark onto the tenon where it needs to be trimmed.



## Hand Cut Dovetails:

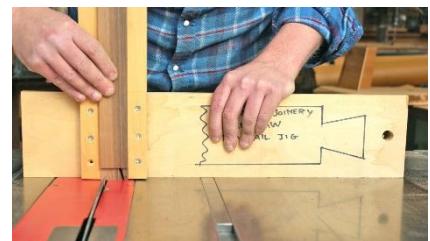
### Layout

If you're using our jig(s), you don't have to lay out as they are already set up for the correct dimension. If you are cutting by hand, set your T-Bevel to a 1:6 slope. Use the dimension in the plan on your piece.

### Cutting the Tails

Start by cutting the tails on the top rail. You can cut these in many ways:

- **Cutting By Hand**- Be sure to practice your sawing technique to ensure that you're able to produce true, square cuts. If you're cuts are out of square, it will make each step along the way much more difficult.
- **Band Saw Jig**- We use a variant of this jig for cutting dovetails, butterfly keys, and tapered legs. It's a very quick and easy way to end up with very accurate cuts.
- **Table Saw Jig**- Using the table saw for dovetails is also a great choice. The quality of cut will be even better here than on the band saw, but both work very nicely for joinery.



### Cutting the Shoulders

Use the table saw to cut the shoulders of the dovetail. Our goal is to get this shoulder cut to align perfectly with the rabbet and not cut so high as to cut into the dovetail. If necessary, clean up any excess waste at the base of the dovetail with a chisel.

### Scribing the tail into the legs

1. Assemble the table with the skirt boards and front rail. With the upper rail in place, clamp the table together with pipe clamps. Use the force of the front clamp to hold the dovetail piece snug.
2. Align the upper rail so that it is flush with the inside of the leg. This establishes the appropriate reveal on the front of the table.
3. Use a marking knife to carefully scribe around the dovetail. There's no need to press especially hard. We want accurate marks. If your knife slips, note that it's a bad mark in pencil.
4. Once you're confident that you've made good scribe marks, take the assembly apart.
5. Using a combination square and a marking knife, square the lines from the base of the dovetail down the inside face of the leg.
6. Set a combination square to the thickness of the dovetail. Use a marking knife to cut a line across the grain to establish the depth of the pin socket.





### Cutting the pin socket

Use a dovetail saw to begin the pin socket cut. Cut 1/16" inside the knife lines and follow both the angled cut on the end grain and the vertical cut along the face grain. Make several kerfs in between to remove some additional waste.



Clamp the leg to the workbench to begin chopping the waste with a chisel. Start at the base line that establishes the depth and chop out the waste.



Once you get within 1/16" - 1/32" of your knife lines, place the leg in the vice. Lightly pare to your knife lines to establish the fit.

Keep an eye on your chisel and make sure that you are cutting squarely down the face of the leg.

Clean up any waste that may be in the corners of the socket. You can undercut the floor and the back wall of the socket to ensure an easier fit without losing strength.



Test the fit slowly by tapping it in with a flat-faced hammer. If it feels too tight, don't force it. Make adjustments to the pin socket to give yourself some more room.

Once it fits, stand up, spin around twice and jump up and down with your hands in the air- You've earned it.





## Tuesday's Goals for the Day!

- ❑ Cloud Lifts Complete
- ❑ Shelf Assembly Complete
- ❑ One Dovetail Complete



## Wednesday

Today our goal is to get everything prepped and sanded for glue up.

### Plow Cuts for Hold Downs:

#### Skirt Boards

The wide skirt boards will get a 1/2" x 3/8" plow across the top, inside edge. Use the 1/2" dado set up on the table saw to make your plow.

#### Upper Rail

The upper rail will get two 1/2" x 3/8" hold down slots that favor the lower inside edge. Use the template to lay out the position and use the plunge router to cut the hold down slots.

### Sanding:

#### Skirt Boards and Legs

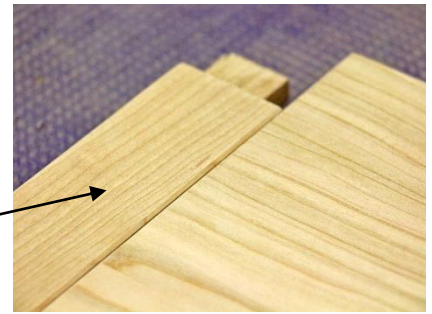
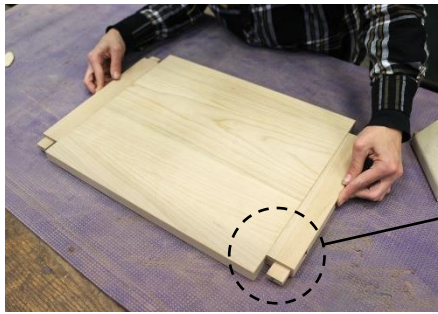
Sand all of your parts through to 220 grit. Be sure to keep the legs flat and square. It helps to sand the legs in tandem, with the mortises together. At 180 grit, sand all exposed edges to break them.

#### Shelf

The shelf assembly will likely not be perfectly flat with the biscuits and screws installed. Sand the assembled piece to level it up, making sure you've attached it with the pieces in the correct orientation.



Once the assembly has been sanded level through 220 grit, take the screws out.



Be sure to sand the edges of the shelf and break the edges. Put a light 45 degree chamfer on both pieces where the breadboard meets the shelf on both the top and bottom faces. Do this with 220 grit sandpaper and a sanding block. Be wary, less is more.

### Leg Buttons:

The layout of the 5/16 x 5/16 leg buttons are on the edge of your story stick. Use it as a template to lay out the position of the buttons and use the bench top mortiser to cut the mortises. Then, sand away the pencil marks with a last pass at 220.



### Before you glue anything, make sure...

- Table assembly dry fit together
- Plow cut for hold downs on inside face skirt boards
- Hold down slots cut into upper rail
- Button mortises cut in to legs
- Shelf breadboards complete – tenons fit to align breadboards with inside of legs, successfully attached to shelf piece, sanded, edges broken, & beveled reveal
- Dovetail cut and fit into socket
- All pieces sanded and edges broken



### Glue Up – Side Assembly:

Do a thorough dry clamp, ensuring that the skirt is flush with the top of the legs and the shelf breadboard is flush with the inside face of the legs. Use the breadboard alignment jig if necessary.

Apply glue to the mortises, then the tenons, and clamp. Be sure to write your name and the end time of the glue up. Clamps can be taken off in 30 mins.



If your skirt board is **high**, with a straight board across the top of the skirt and leg, clamp down to the bench to pull it flush



If your skirt board is **low**, with the assembly upside down, pull the skirt board down to the bench with a clamp. Use a caul to protect your cloud lift.



## Glue Up – Entire Table:

When the glue on the two side assemblies has set, you can glue up the rest of the table. Do a thorough dry clamp. Ensure the back skirt board and the upper rail are flush with the top of the legs. Use the drawer opening spacer blocks to register the lower rail in its proper position.

Make a light pencil mark where the lower rail should be positioned before you take off the clamps. You'll use this as a benchmark during the real glue up.

Then, take the dry clamp assembly apart, breathe deeply and:

- Apply glue to the mortises, then the tenons. Don't apply glue to the biscuits in the shelf.
- Once the piece is assembled, apply glue to the dovetail socket and the dovetail and tap in place.
- Clamp and check for square by measuring diagonally.



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## Wednesday's Goals for the Day!

- Side Assemblies Glued
- Dry Clamp of Entire Table



# Thursday

## Dovetailed Drawers:

Fronts and backs are installed horizontally on top of the jig and sides are installed vertically. Make sure the clamps are adjusted to hold the pieces firmly.

Start with some scrap material to dial in the fit of your jig. There are a number of things you've got to get right before cutting your drawers.



Depth – The position of the template controls how deep the tails will go into the pin sockets. It's our goal to have the end grain pins protrude ever so slightly. Loosen the clamps and adjust the brass, knurled knobs to make a change.



Alignment – Our goal is to have a half pin at the top and bottom of the drawer joint. If one side is heavier than the other, adjust the side stop to correct.



Fit – The fit is controlled by the depth of the router bit. Making the bit cut deeper will result in a tighter fit. Retracting the bit will make it looser. Do a test cut and make adjustments based on your results.

### Marking your drawer pieces

Assemble the drawer as you want it and mark X's on the inside faces. These X's will always be facing out when you cut your dovetails. Mark the top edges of the drawer with FL (front left), BL (back left), FR (front right), BR (back right).



### Cutting the plow for the drawer bottom

Use the dado stack to cut a plow through the inside bottom of all of your drawer parts. Ensure that the blade is passing through the center of the bottom pin socket.



### Drawer Glue-Up

1. Sand all of the inside faces of the drawer and the outer face of the drawer front. Sand the drawer bottom at 180 grit and lightly break the edges.
2. Do a dry fit of the drawer with the drawer bottom installed.
3. In a perfect world, these joints don't have to be clamped, but you'll want to have some clamps at the ready just in case.
4. Apply glue to the pin sockets and the tails and assemble the drawer. Make sure the joint is seated and that the end grain pins are protruding slightly. Confirm that all of the joints are closing in the same fashion.
5. Check for square by measuring diagonally and adjust with a clamp if necessary.



### Greene & Greene Style Breadboard End:

- Arrange the breadboards and tabletop the way you want them to present, then mark their orientation.
- Cut a 9/32" x 3/8" plow on the inside edge of both breadboards. Make two passes, registering either face on the fence to create a perfectly centered cut.
- Cut a 9/32" x 3/8" tongue on the end of the table top. Use push blocks and hold the piece down firmly, registering the end against the sacrificial fence.

### Breadboard Details

Sand the outer edge of the breadboards and layout the position of the buttons according to the project plan. Then, cut the button mortises using the stops on the stationary mortiser.

The mortiser will leave little center holes where the brad point bit engaged. Drill through holes at the drill press through each of these points to create clearance holes.

Use the large drill press with the specially ground drill bit to elongate the slots inside the outer button mortises. The elongated slots allow for the movement of the table top.

### Attaching the Breadboards to the Top

The tabletop is currently over-sized in width. This is done so any tear-out from the tongue cut can be removed. Joint an edge, rip the tabletop to 15 5/16, and then re-joint the sawn edge.

Make a center mark on the tabletop and square it across the end. Align the tabletop and breadboard on center and transfer marks from the center of the clearance holes over to the tongue of the breadboard. Dimple with an awl and drill clearance holes for a 3" screw.



Mark the breadboards and the tabletop in a hidden area so you know how everything goes together. Wax the screws, add a washer and install the center screw only.



Sanding and Shaping

Sand the assembly through 220 grit to level the surface and remove machine marks.

Make a light pencil mark on the inner edge of the breadboard where it meets the edge of the tabletop. Take the assembly apart and sand the edges of the tabletop and the ends of the breadboards. Break all exposed, outer edges.

The corners of the breadboards should be slightly rounded to match the shape of the splines. Round the corners slightly with a sanding block. Be careful to not round the inner corner past the point where it meets the end of the tabletop.

Once all of the edges are broken, sand a 45 degree bevel on the mating edges of the breadboards and tabletop with a sanding block. And, when everything has been shaped as you like it, install all six 3” screws with a washer on each.

**HOMEWORK:**

Shaping your Splines

Take four spline blanks and a sanding stick and shape the spline to look like the one pictured.

Use the jig provided to round the ends to fit perfectly in the radius of the router cut. Don't round the edges past the point where it sits in the jig. And, try to make all of the splines the exact same length.



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Thursday's Goals for the Day!

- Drawers Complete
- Tabletop Shaped and Assembled





# Friday

## Spline Mortises:

### The Set-Up

Use a piece of 2x6 pine milled to the same thickness as your tabletop as a practice piece to dial in the cut.

On the edge of the pine piece, use a marking gauge to layout center lines and mark the length of your splines.



Remove the end stop on the jig and rout the first test cut closer to the middle of the board. Set the jig in place with two, 1/4" spacers to raise the jig off of the test board. Set the middle depth stop on your router to cut 5/16" deep.

Adjust the fences on the jig to track the router bit straight through the cut. Use your marking gauge center lines as a guide.



Set the stops to cut the appropriate length of your splines. Clamp the jig in position and do a test cut.

Before you remove the jig, check if your length is correct. If the slot is too short, you can make an adjustment with the jig in place. If it's too long, you'll have to make another test cut.



Take the jig off and inspect whether your slot is centered and parallel; parallel is more important than precisely centered within 1/64. If it looks centered to your eye it's good enough.

Determine where you want the spline to start. In most cases, it's around 1 3/8" from the outer edge of the breadboard. Lay this mark out on your scrap and set the end stop (on the underside of the jig) so the router cut begins at your line. Do one more test cut to confirm.

### THE REAL DEAL

Take three deep breaths. Remove sweat from forehead.

- Install the jig with the end stop against the breadboard
- Install one 1/4" spacer to level the jig with the edge of the tabletop
- Clamp in place



Confirm that the 5/16 router bit is hitting both sides of the plow. Do this before each cut, as it's possible that your plow is no longer precisely centered. Depending on how much you sanded your piece, the centeredness can change. If it isn't, maintain your parallel cut by adjusting with business cards to move the fence in the proper direction.



Make an initial climb cut to clear out the waste. After you've cut the full 5/16 depth, switch to the lower depth. Start this cut just ahead of the breadboard and climb cut back.

Be sure to switch back to the initial depth stop so you don't cut the next one at this final depth.

Rinse and repeat.



## Fitting the Drawer:

### Sanding the Drawer Box

Start with 120 grit to level the joints. Make mark with a combination square on the drawer front so you can keep an eye on keeping the front square. Break the outer edges.

### Attaching the Runners

1. Level the table on your workbench and install the drawer. Clamp the back of the drawer to the back of the table.
2. Install business cards to achieve the desired reveal in the front. If it's very dry, add 50% more cards to the top. If it's humid, make the number of cards even.
3. Adjust the back of the drawer with a spirit level and re-clamp.
4. With the drawer clamped firmly in place, tilt the cabinet on its side and mark the bottom of the drawer runners with a fine line.
5. Remove the drawer and mark the position of the screw holes with an awl. Do your best to mark these as close to the center as possible. The clearance holes are oversized to provide a slight adjustment if necessary.
6. Drill pilot holes, then attach the runners with a 2" screw and washer.



### Attach the Side Guides

Place the side guides in place and test the action of the drawer. This should not be super tight. The drawer should work easily. Drill a countersink and clearance holes for a 1" screw and attach them to the runners.

### Drawer Stop

Find an appropriate thickness of wood to determine where the drawer stops. Cut these pieces to 3 1/2" and drill two 1/16" clearance holes for a 5/8 brad. Support the table and tap the brads in to the inside back.



## Friday's Goals for the Day!

- Spline mortises cut
- Drawer fit and installed



## Saturday

### Making the Buttons:

- 14 5/16 x 5/16 buttons
- 6 1/2 x 1/2 shelf buttons
- 2 1/2 x 1/2 drawer pull buttons
- 2 1/2 x 1/2 tabletop buttons
- 4 1/2 x 15/16 tabletop buttons

Shape the button stock on the disc sander and use the appropriate stop block at the table saw to cut them to length.

### Making Drawer Pulls:

Sand the drawer handle to remove machine marks. Use the jig at the stationary mortiser to cut the button mortises. Drill clearance holes through the button mortises. Sand the base of the handle to remove machine marks.

Using the alignment jig, apply some glue to the handle base and attach it with two pan head screws. Clean any squeeze out and tighten the pull in your vice for 30 minutes. Remove the pan head screws.

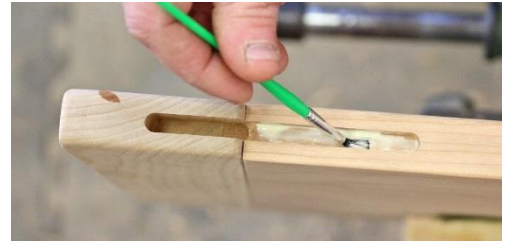




## Installing Splines and Buttons:

### Installing the Splines

Using a small artists brush, apply glue inside the mortise on the table top edge grain only. Don't put any glue on the spline. Our goal for everything here is no squeeze out. Tap the spline in place with a smooth faced hammer.



### Installing the Buttons

It's helpful to slightly bevel the back of the buttons to make them enter the mortise easier. Also, use a 1/4" chisel to clear out waste in the mortises where it may be a problem (mostly the legs). Apply a dab of glue inside the mortise and tap the button in straight. Stop when the button is at the desired level.



All of the buttons are different lengths. Make sure you're using the appropriate length for the part you're working with. Double check that you've installed the screws for the shelf breadboard.

## Finishing Up the Drawer:

### Attaching the Pull

Use the drilling guide to drill clearance holes. Make a center line on the bottom edge of the drawer front. Clamp the jig with a backer board against the inside face of the drawer and drill 7/32" clearance holes. Attach the pull with two 1 1/2" screws with brass finish washers.



### Attaching the Drawer Tab

Drill a small pilot hole for the drawer tab 7/8" down from the back edge, in the center. Shape the tab and install with the 3/4" brass screw.

## Saturday's Goals for the Day!

- Make and assemble drawer pull
- Shape and cut buttons
- Install splines and buttons
- Attach drawer pull and tab



# Epilogue

## After class:

You may have some bits to finish after you leave here. As you know, this is a complex project with lots of little ‘finishing touches’ to take care of. Before you start the finishing process, make sure you have:

- All buttons shaped and glued into shelf, table top, legs, and drawer pull
- Splines shaped and glue into table top
- Drawer fit and clearance holes drilled for drawer pull
- Drawer tab shaped and pilot hole drilled into drawer to attach it
- Scan all glue joints for any glue remnants or left over pencil marks- if you find any, remove with 220 grit sand paper

## How we finish this project:

As we discussed in the first course, there are several ways to finish any project so to each their own, but we will say that it would be a tragedy to enhance the color in this project with anything other than boiled linseed oil. The natural colors of the walnut and cherry are stunning, and the contrast they create within the project is the intended goal. So, use boiled linseed oil. Don’t argue, you’ll be happy with the results. Anyway, here is a brief overview of how we finish pieces like this (you are free to finish it however you choose, of course):

- Flood the piece with boiled linseed oil, wipe down to remove excess oil, and let piece dry for 5-7 days. \*Make sure to properly dispose of your oily rags! Let them dry out hung up so air can get to all sides. Throw them away when the chemical drying reaction has fully taken place and the rags are dry and stiff to the touch.\*
- We like to finish the base with an easy, even finish like a spray lacquer. Apply two coats, then sand lightly with 220 grit and 0000 steel wool. Remove all dust and apply third coat.
- We finish the table top with something more durable as we want it to be able to withstand the wear-and-tear of normal use. We tend to use wipe on polyurethane, Waterlox, or General Finishes Arm-R-Seal. This is likely to take 4-5 coats, sanding and steel wool between each. Rub out the final coat with 0000 steel wool lubricated with mineral oil being careful to avoid rubbing through.

Feel free to refer to the finishing slide show included on your Practical Woodworking DVD and/or Rob’s Craftsby class on finishing: [www.craftsy.com/class/flawless-finishing](http://www.craftsy.com/class/flawless-finishing)

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## Congratulations & Thank you!

Thanks to all for maintaining the motivation, enthusiasm, and focus needed to make this class a success for everyone. We are hopeful that you walk away with a whole new set of woodworking skills, techniques, inspiration, and safe habits!

Cheers to another great week at the Lohr School of Woodworking, and a job well done by you!