

THE JOINERY

Woodworking Shared Shop and Learning Community

Tool Tote

Project Plan

A Beginner's Guide to Building a Classic Workshop Accessory

Estimated Build Time: **3.5 Hours**

Skill Level: **Beginner**

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Welcome

Welcome to your tool tote project. This guide will walk you through building a classic workshop accessory from a single 8-foot board. Whether you're completely new to woodworking or have some experience, this guide provides the knowledge and confidence you need to succeed.

The tool tote is an ideal beginner project because it introduces fundamental skills—milling lumber, precision cutting, joinery, shaping, and assembly—while producing something genuinely useful for your shop.

About This Guide

I'm Steven Ricks, co-owner of The Joinery, a woodworking shared shop and learning community in Middleton, Wisconsin. I've taught hundreds of people how to work with wood, and I've written this guide to share not just the technical steps, but the practical wisdom that makes the difference between frustration and success.

Throughout this guide, you'll see special callout boxes labeled "Thoughts from Steven." These are where I share things that don't fit neatly into step-by-step instructions—the philosophy behind the techniques, mistakes I've seen students make (and how to avoid them), shortcuts that actually work, and conventional wisdom that's worth ignoring. These thoughts come from years of hands-on experience and teaching, and they're often the most valuable part of this guide.

Thoughts from Steven

Woodworking books and YouTube videos tend to present everything as if there's one right way to do it. There isn't. There's what works, what doesn't, and a lot of gray area in between. My goal is to give you the principles and the confidence to make good decisions, not to turn you into a robot following instructions. When you see these boxes, I'm talking to you like I would if you were standing next to me at the bench.

Project Overview

This project guides you through building a functional tool tote from a single 8-foot board. You'll learn fundamental woodworking skills including milling rough lumber, precision cutting, Domino joinery, bandsaw shaping, and proper glue-up techniques.

The finished tote serves as both a learning exercise and a practical shop accessory—perfect for carrying hand tools, supplies, or project materials around your workspace.

Thoughts from Steven

This is a prototype. When I do a project for the first time, I like to think of it as a prototype—I'm practicing the skills to produce the real piece once I have it all figured out. This takes a lot of the pressure off. It doesn't need to be perfect. You can focus more on the process and learn from each mistake. Then after you've done it once, do the real one. Sometimes for the first version I use lower-grade wood or scraps around the shop. This really takes the pressure off. But quite often I use my favorite wood—cherry—and dive straight in because it's already affordable. Very often once I've finished the "prototype," I look at it and say "Wow, that looks great!" Sometimes I make a second, sometimes I don't. My recommendation: consider this build a prototype. Take the pressure off and enjoy the process. You may be impressed with what you turn out.

Skills Covered

- Milling rough lumber to precise thickness
- Crosscutting and ripping to dimension
- Template tracing and layout
- Domino loose-tenon joinery
- Bandsaw curved cuts
- Router edge treatment
- Gluing and clamping techniques

Understanding Wood

Before cutting any wood, it helps to understand how wood behaves. Unlike metal or plastic, wood is a natural material that continues to respond to its environment long after it's been harvested.

Grain Direction

When you look at a board, you're looking at the cross-section of a tree's growth. Understanding grain direction is essential:

Long grain runs the length of the board, parallel to the trunk. This is the strong direction.

End grain is visible on the ends where growth rings are exposed. This is weak and absorbs finishes differently.

Face grain is the wide surface showing the decorative pattern.

Why Wood Moves

Wood expands and contracts primarily across the grain (width), not along the grain (length). This movement occurs as wood absorbs or releases moisture in response to humidity. For a small project like a tool tote, movement is minimal, but understanding this principle will serve you well as you tackle larger projects.

Thoughts from Steven

"Wood will do what wood wants to do." This is one of my favorite sayings at The Joinery. We can plan for movement, design around it, and do everything right—but wood is ultimately unpredictable. A tree spent decades growing under tension and compression, reacting to wind, weather, and its own weight. That stress is locked inside the wood. When we mill, cut, and process a board, we release some of that tension—and we never know exactly when or how the wood will react. It's kind of like us humans, actually. Our experiences shape us in ways we don't always understand until later. This isn't meant to scare you. It's meant to free you. You can't control everything, so focus on what you can control: sharp tools, careful technique, and enjoying the process.

Materials

Primary Stock

- One 8' × 7" × 4/4 (rough-sawn) hardwood board

What Does 4/4 Mean?

Lumber thickness is measured in quarters of an inch. "4/4" (pronounced "four-quarter") means the rough board is approximately 1 inch thick before planing. After milling to remove saw marks and flatten both faces, you'll end up with about $\frac{3}{4}$ " of usable thickness. This is why we start with 4/4 stock to achieve a $\frac{3}{4}$ " finished dimension.

Hardware & Consumables

- 8mm × 40mm Domino tenons (quantity: 8–10)
- Wood glue (yellow PVA such as Titebond Original or II)
- Sandpaper: 120 and 150 grit

Tools Required

Milling & Dimensioning

- Jointer — Flattens one face and one edge of rough lumber
- Planer (Thickness Planer) — Brings boards to consistent thickness
- Miter Saw — Makes accurate crosscuts to length
- Table Saw — Rips boards to width

Joinery & Shaping

- Festool Domino (DF 500) with 8mm cutter — Creates mortises for loose-tenon joinery
- Bandsaw — Cuts curved profiles on the end pieces
- Trim Router with 1/8" round-over bit — Eases sharp edges

Assembly & Measurement

- Bar or pipe clamps (4–6)
- Measuring tape
- Combination square
- Pencil
- End profile template (provided)

About the Festool Domino

The Domino is a loose-tenon joinery system that creates strong, accurate joints quickly. It cuts an oval mortise (slot) into both pieces being joined, then a football-shaped tenon is glued into both mortises. Think of it as a modern, faster alternative to traditional mortise-and-tenon joinery. If you don't have access to a Domino, this project can be adapted to use dowels, biscuits, or pocket screws.

Cut List

After milling, you'll produce the following components:

Component	Qty	Thickness	Width	Length
Bottom	1	$\frac{3}{4}$ "	6.5"	22"
Ends	2	$\frac{3}{4}$ "	6.5"	11"
Sides	2	$\frac{1}{2}$ "	6.5"	22"
Handle	1	Scrap	Sized to template	~14–16"

Why Different Thicknesses?

The sides are thinner ($\frac{1}{2}$ ") than the bottom and ends ($\frac{3}{4}$ ") for two reasons: visual proportion and material efficiency. Thinner sides look more elegant and reduce visual bulk, while the thicker bottom provides strength where the tote bears weight. This design also lets us get all our parts from a single 8-foot board.

Safety Guidelines

Woodworking is rewarding but involves inherent risks. Follow these guidelines to work safely.

The Joinery's 2-3-12 Rule

At The Joinery, we use the 2-3-12 rule as a simple framework for safe tool use:

2 — Two Control Surfaces: Every tool has two control surfaces. Know what they are and how to use them the way the manufacturer intended.

3 — Three Inches: Keep your hands and fingers at least 3 inches away from the blade or cutter at all times.

12 — Twelve-Inch Gut Check: If the board you're cutting is 12 inches or less, do a gut check—are you using the correct tool for the job? If your gut says no, use a different tool. Most cuts can be made with more than one tool in the shop.

General Shop Safety

- Always wear safety glasses when operating any power tool
- Wear hearing protection around loud machinery (planer, router, table saw)
- Remove loose clothing, jewelry, and tie back long hair before operating machines
- Never reach over or behind a spinning blade or cutter
- Keep your workspace clean and free of sawdust buildup
- Know where the emergency stop buttons are located

Tool-Specific Safety

- Jointer/Planer: Use push blocks, never place hands directly over the cutterhead
- Miter Saw: Keep hands at least 3" from the blade, let the blade stop fully before raising
- Table Saw: Use the blade guard and splitter, never stand directly behind the blade
- Bandsaw: Keep fingers to the side of the blade, not in front of it
- Router: Start and stop off the workpiece, move against the bit rotation

Thoughts from Steven

Safety rules aren't arbitrary—they come from accumulated experience, often painful. Every rule exists because someone, somewhere, got hurt doing the thing the rule tells you not to do. When in doubt about a cut, stop and ask. There's no shame in asking; there's only shame in getting hurt because you were too proud to ask.

Build Process

Phase 1: Stock Preparation (25 minutes)

Begin by milling the full 8-foot board to $\frac{3}{4}$ " thickness using the jointer and planer.

Note for This Class

The lumber provided for this class has already been faced on the jointer. We'll review the jointing process below for your reference, but you can proceed directly to the planer. When purchasing lumber for future projects, you can ask the lumber mill to face one side of the board and add a straight line cut (SLR) to one edge—this saves significant time in the shop.

1. Inspect the board for defects. Look for cracks, knots, or warping. Position any defects where they'll be cut off or hidden.
2. Determine the grain direction. Run your hand along the surface—it should feel smooth going "with the grain" and rough going "against." Feed the board into machines with the grain to minimize tear-out.
3. **Joint one face flat (reference information).** When working with rough lumber, place the concave (cupped) side down on the jointer. Take light passes until the entire face is flat and shows fresh wood across its width. This establishes a reference surface for the planer.
4. Plane to $\frac{3}{4}$ " thickness. Place the jointed face down on the planer bed. Take light passes ($\frac{1}{32}$ " or less) until you reach $\frac{3}{4}$ " thickness.

Understanding Snipe

Snipe is a slightly deeper cut at the beginning or end of a board. There is no way to completely eliminate snipe—it's a symptom of how the planer works, caused by the feed rollers lifting the board slightly as it enters and exits. To minimize its impact: (1) support the board as it enters and exits, (2) take lighter passes, or (3) leave your board a few inches longer than needed and cut off the snipe marks.

Phase 2: Initial Crosscuts (20 minutes)

At the miter saw, crosscut the $\frac{3}{4}$ " stock into three pieces.

1. Cut one board at 22" for the bottom.
2. Cut two boards at 11" for the ends.
3. Take the remaining ~4-foot section back to the planer and mill it down to $\frac{1}{2}$ " thickness. This thinner stock becomes the side panels.

Measure Twice, Cut Once

Before each cut, mark your measurement with a sharp pencil. The Joinery's miter saws have either a laser or shadow line indicator that shows both sides of the blade kerf—position your mark so the kerf falls on the waste side of your line. Make a test cut on scrap if unsure. It's always easier to remove more material than to add it back.

Phase 3: Side Panel Preparation (30 minutes)

Now we'll create the side panels and bring all pieces to their final widths.

1. At the miter saw, crosscut two 22" pieces from the ½" stock. These are your side panels.
2. Move to the table saw. Set the fence to 6.5" and rip all panels to width—both the ½" side panels and the ¾" bottom and end pieces.
3. Verify all pieces are consistent in width before moving on.

Understanding Ripping vs Crosscutting

Crosscutting means cutting across the grain (making a board shorter). Ripping means cutting along the grain (making a board narrower). We use the miter saw for crosscuts because it excels at precise 90° cuts. The table saw is better for ripping because its fence provides consistent parallel cuts along the board's length.

Thoughts from Steven

Consistency matters more than precision. If all your pieces are exactly the same dimension—even if that dimension is slightly off from the plan—your project will go together well. It's when pieces vary from each other that you run into problems. So if you rip one piece at 6" and it comes out at 5-15/16", don't panic. Just set the fence there and cut all the remaining pieces to match.

Phase 4: Shaping the Ends (30 minutes)

The end pieces get curved profiles and Domino mortises for joinery.

1. Using the provided template, trace the end profile onto both 11" end boards. The template includes the curved top and handle slot location.
2. Mark the Domino mortise locations on each end board. You'll need mortises on both vertical edges (for the sides) and along the bottom edge (for the bottom board).
3. Cut all mortises using the Domino tool set to 8mm width. For the end board mortises, set the depth to 15mm—this shallower depth prevents the Domino from punching through the ¾" stock. Ensure consistent centering on each edge.
4. At the bandsaw, carefully cut out the traced profiles. Focus on accuracy over speed. Stay slightly outside your line—you can sand to the line but can't add wood back.

Phase 5: Handle Fabrication (30 minutes)

The handle spans between the two end pieces and provides a comfortable grip for carrying.

1. Select a piece of scrap stock suitable for a comfortable grip. The handle should be long enough to span between the end pieces with tenons inserted.
2. Mill the handle to comfortable dimensions—typically about 1" to 1¼" in diameter or width.
3. Cut Domino mortises (8mm × 25mm depth) into each end of the handle. The deeper 25mm depth on the handle side, combined with the 15mm depth on the end boards, offsets the 40mm tenon toward the handle within the joint.
4. Perform a dry fit: assemble the handle into the end pieces without glue to verify proper fit. The handle should seat fully with no gaps.

Offset Domino Technique

By using different mortise depths (15mm in the end boards, 25mm in the handle), we offset the 40mm tenon toward the handle side of the joint. This technique allows us to use standard-length tenons while avoiding breakthrough on thinner stock. The math: 15mm + 25mm = 40mm total depth for the tenon.

Phase 6: Edge Treatment (30 minutes)

Breaking the sharp edges makes the tote comfortable to handle and gives it a finished appearance.

1. Install the ⅛" round-over bit in the trim router. Set the depth so the bearing rides against the edge of the workpiece.
2. Route all outside corners of every component: both faces of the sides, ends, bottom, and all edges of the handle.
3. Follow routing with light sanding (120 grit, then 150 grit) to remove any tool marks or fuzz.

Router Safety

Always start the router with the bit off the workpiece. Move the router left to right (against the bit's rotation) for controlled cuts. Keep firm pressure against the edge being routed. Never force the router—let the bit do the cutting at its own pace.

Phase 7: Assembly (25 minutes)

With all parts prepared, it's time to bring everything together.

1. Perform a complete dry assembly. Fit all Domino tenons without glue to verify everything comes together squarely with no gaps. This is your last chance to make adjustments.
2. Once satisfied, disassemble and apply glue. Put glue in the mortises (not on the tenons) to avoid squeeze-out inside the joints.
3. Start by gluing and assembling the handle to the two end pieces.
4. Turn the handle/end assembly on its side and glue the bottom to it.
5. Glue the sides to the ends and bottom to complete the tote.
6. Apply clamps and check for square by measuring diagonals—they should be equal. Also sight down the length to check for twist.
7. Wipe away excess glue with a damp cloth before it dries. Dried glue won't accept stain or finish.

Glue-Up Tips

Have everything ready before you apply glue—once it's on, you have 10–15 minutes of working time. Keep a damp rag and a dry rag nearby. Apply clamp pressure gradually and evenly. Don't over-tighten; you want firm pressure, not crushed wood fibers.

Thoughts from Steven

The glue-up is where beginners often panic. Don't. Yes, glue has a working time, but 10–15 minutes is longer than you think. Move with purpose, not with panic. If something isn't going together right, stop and figure out why rather than trying to force it. You can always wipe off the glue and try again.

Finishing Your Tote

After the glue has cured (at least 1 hour for handling, overnight for full strength), you can apply a finish. Here are your options:

Penetrating Oil

Danish oil, tung oil, or boiled linseed oil are easy to apply and bring out the grain. They provide a natural, low-sheen look and are easy to touch up if the tote gets dinged.

Wax

Quick to apply, provides a soft sheen, and can be applied over oil for additional protection.

Polyurethane

More durable and water-resistant, available in various sheens. Requires multiple coats with sanding between.

Thoughts from Steven

I'm a lazy finisher. Finishing is my least favorite part of the project, so I look for easy solutions that last and are repairable. My favorite finish is Tried and True—it's a linseed oil and resin finish that's non-toxic, doesn't produce harsh fumes, and gives a beautiful natural wood look. If you get a water ring or scratch, just sand it out, apply more finish, done. Wipe on a thick coat, let it sit 15–20 minutes, wipe off the excess. Wait 24 hours, do a second coat. That's it. For a shop tool tote that will see regular use, a simple oil finish is often the best choice—it's easy to touch up when the wood inevitably gets dinged or scratched.

Tips for Success

- Take your time at each step. Rushing leads to mistakes that are hard to fix.
- Label your parts as you cut them. A piece of tape with "Bottom" or "Left End" prevents confusion later.
- Keep the same face up when machining multiple parts. This ensures consistent thickness even if there's slight variation.
- Check your measurements against the cut list before each cut. It's easy to mix up 22" and 11".
- Sand before assembly whenever possible. It's much easier to sand flat panels than inside corners of an assembled box.
- Practice on scrap first if you're unsure about a cut or technique.

Thoughts from Steven

Don't fall in love with your work—at least not until it's done. I see students get so attached to a piece that they're afraid to make the next cut because they might ruin it. This paralysis actually makes mistakes more likely. Stay engaged but detached. If you mess up, it's wood. There's more wood. Learn from the mistake and keep going.

Glossary

4/4 (Four-Quarter): Lumber thickness designation meaning approximately 1 inch rough. Planed to about 3/4" finished.

Crosscut: Cutting across the grain to shorten a board.

Domino: A loose-tenon joinery system using a machine (Festool Domino) to cut mortises and football-shaped tenons.

Dry Fit: Assembling parts without glue to check fit before final assembly.

End Grain: The wood surface exposed when cutting across the fibers, showing growth rings.

Face Grain: The wide surface of a board showing the decorative grain pattern.

Jointer: Machine that flattens one face of a board, creating a reference surface.

Kerf: The width of material removed by a saw blade.

Long Grain: Wood fibers running the length of a board, parallel to the tree's trunk.

Mortise: A slot or hole cut into wood to receive a tenon.

Planer: Machine that reduces board thickness to a consistent dimension.

Rip: Cutting along the grain to narrow a board's width.

Snipe: A deeper cut at the beginning or end of a board, caused by planer feed rollers.

SLR (Straight Line Rip): A service where the lumber mill cuts one straight edge on a board.

Tenon: A projection on the end of wood that fits into a mortise to form a joint.

Next Steps

Congratulations on completing your tool tote! This project has introduced you to the fundamental workflow of woodworking: starting with rough lumber, milling to dimension, cutting joinery, shaping, and assembling.

Ready to continue building your skills? The Joinery offers classes at all levels, from beginner workshops to advanced furniture making. Visit us to explore:

- Additional beginner projects (cutting boards, small boxes, shelves)
- Intermediate furniture classes (tables, chairs, cabinets)
- Tool-specific workshops (hand tools, turning, carving)
- Membership for open shop access

Thoughts from Steven

Every piece of furniture you'll ever build uses the same basic skills you practiced today: milling, measuring, cutting, joining, and finishing. The projects get more complex, but the fundamentals stay the same. Master these basics, and everything else is just variations on the theme. Welcome to woodworking.

The Joinery

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Middleton, Wisconsin